The Dental Digest.

Vol. VIII. CHICAGO, OCTOBER, 1902. No. 10.

Original Contributions.

PROFESSIONAL ETHICS VERSUS PATENTS.

BY C. E. BENTLEY, D.D.S., CHICAGO. READ BEFORE THE ILLINOIS STATE DENTAL SOCIETY, AT SPRINGFIELD, MAY 13-15, 1902.

It is quite the customary thing nowadays to inveigh against commercialism—that desire for gain which they say is threatening to deluge the world and to sweep aside all things that cannot be quoted in terms of dollars and cents. Greed of gain is a modern fever, we are told, from which no part of the body politic is immune. To my mind, this is glaringly untrue. These selfish human qualities are as old as man, and even if in this twentieth century unbounded opportunity and almost unrestricted resources, natural and artificial, do give them a larger place and more prominent setting in the drama of life, the powers which hold them in check, brotherhood and altruism and cooperation, have grown in like proportion and the equilibrium has been preserved. In fact, I must go further and assert that in no stage of history has there been a deeper and a wider sense of a common tie—a deep underlying sense of brotherhood, which is so inimical to personal selfishness, and which subserves the use of each for the good of all—than at present. Exclusiveness can have no place where liberality and humaneness make for breadth and depth and nobility in life, on whatever line of activity. Exclusion—the cutting off of my brother from things that are mine—leaves me within a selfish enclosure where there is stagnation and decay. Inclusiveness, sharing, brotherly exchange of mine and thine, means growth, movement, vitality and all the powers which make for progress.

Of all the places where exclusiveness seems most inappropriate, none is more so than what is known as a liberal profession. The name itself indicates that to which exclusiveness is most deadly, and

stands for all that makes for unselfish devotion and high use for the service of humanity. Dentistry, from being a mere handicraft, has by years of hard and noble labor by its devotees been lifted to a proud place among the useful arts and liberal professions. Progress connotes obligation. In using and spreading and developing as the profession has done, it has incurred the obligations of its elevated position—Noblesse oblige—and from the heights to which we have climbed we cannot afford to close our minds and senses to the highest impulses of our times. Sharing, helping, giving as well as receiving, must be our mutual spirit if we would keep abreast of the highest and the best; and if there be any habits or customs of a contrary nature which have come to us out of an old order of things, we must put them aside, *stamp them out,* before we can reasonably place ourselves in the front ranks of those modern things which are of the highest morality.

From this point of view, then, is it justifiable in a dentist to restrict in any measure the use of an invention whose purpose is to relieve suffering and to facilitate the labors of fellow-workers? Such action, to my mind, is inimical to the ethics of our profession. It not only repudiates the debt which all men owe to the progress and advancement of their own special era, but it evades that more direct personal obligation which every man should acknowledge to the profession which has done so much for him—which has supplied him with the ability to make the very thing whose free use he denies to her when he places it under the greedy hands of a patent.

The college curriculum itself, the medium by which the embryo is made into an actual dentist, is but the accumulation of knowledge, of systems, of methods and of ideas, to which thinking, studious, inventive minds have contributed through all the years. This vast treasure house is open to the newcomer without let or hindrance. He freely helps himself; uses what he takes for his convenience and profit; then as soon as he sees a method or an idea which will still further increase this treasure, and whereby he may be able to do for others what has so freely been done for him, forthwith he keeps it to himself and proceeds to build an enclosure around his creation, exacting toll from all who desire to share its benefits.

Emerson says, in his essay on Compensation, "Benefit is the end of nature. But for every benefit you receive a tax is levied. He is great who confers the most benefit. He is base—and that is the one base thing in the universe—who receives favors and renders

none." A man who thoroughly digests and assimilates this truth from one of the world's wise men will be only too glad to give his very best, in order that he may escape the baseness of only receiving.

It seems strange to me that although as a profession we have made such marvelous progress within the last decade, we still make no advance in this matter of patents, standing with hesitating feet because of divided opinion. The history of other professions would seem to be a sufficient guide to decision, even if purely ethical ideas have little weight with some. No other liberal profession harbors this selfish practice to any appreciable extent. In the world of arts and crafts and pure mechanics patents have their place and need no argument to defend their *raison d'etre,* but the very nature of a liberal profession prohibits a dental doctor—and doctor in its purest meaning is teacher—from this method of exclusion. To my mind, every man who patents tacitly puts his calling among the crafts or trades and forfeits his place in the ranks of professional men. I fully agree with one of the brightest minds in our profession (Dr. Rollins) when he says, "So long as members of the profession who patent their inventions and make money on them are honored to the extent of our power by being asked to be leaders in our schools and before societies, so long will dentistry remain a trade, and I for one shall be ashamed to use my dental degree." The medical profession has long outgrown this practice. The man who patents his drugs, his methods or his instruments is soon relegated to the realm outside the ethical ranks, and in some countries the physician who resorts to such money-making process forfeits his diploma.

Albert Shaw, editor of *Review of Reviews,* at the recent convocation of the University of Chicago, paid a tribute to the medical profession which is worthy of a verbatim report here. He said: "It is to men of this noble profession that we owe that greatest of all modern discoveries, namely, the discovery that those very conditions of life which fifty or seventy-five years ago seemed destined to destroy the human race in the civilized countries of high industrial activity, could be turned into conditions for the positive improvement and progress of the race. It was this profession that developed the modern science of sanitary administration; worked out and applied the germ theory of disease; abolished epidemics of the large and uncontrolled sort, such as used to ravage all great towns at frequent intervals; showed us the relation of pure water,

sufficient air supply and sunlight to the health of the community; taught us to inspect food; lowered the rate of infant mortality by guarding the milk supply, and, in short, set the real standard for the administration of municipal government." If patents had shackled its every step, how far along this noble list of achievements would medicine have traveled to-day?

We claim to be a branch of that noble profession of medicine, and during the last quarter of a century we have fully demonstrated the justice of that claim. Verily, in several instances the younger branch has led the older in some directions never before exploited. We cannot, then, afford to pursue practices which experience and lofty development have shown the older branch to be wrong and retrogressive. If we rescue the husks which our senior brothers have outgrown and cast aside from the dust heaps of primitive customs, and deck ourselves with their shameful covering, can we reasonably expect to stand side by side with that other and claim the same respect and recognition from just and sensible people? Again, one who enters as a newcomer into a household already established and organized must accept the rules and regulations which he finds there. He cannot expect to impose his ideas in the place of those already well founded by time and experience. If he come within he must conform, and if he cannot conform *he must stay outside.* But dentistry is *within* the household, and the time is near at hand when those dentists, just as those physicians who patent, will be considered apart from the brotherhood of bona fide scientists.

"But I am entirely within my legal rights when I patent my invention," says one. Granted—granted instantly, but, my friends, this is not a question of law, but of *professional ethics.* The law takes no note of the ethical quality of action, and it is the ethical quality of our acts which raises us above the ranks of craftsmen and places us with other liberal professions. The question of dental patents is a purely moral one and can be approached in no other light. The man to whom this appeal means nothing, who is unable to see other than the dollar mark on things, of course will continue to patent; but the point is that the established code of our great calling is such that in doing so he will immediately read himself out of the legitimate ranks of the profession.

Looking at the matter from a commercial point of view, even the upholders of patenting fail to prove that there is ever any commensurate gain to the patentee. On the contrary, the several cases

of litigation, the squabbles and the unseemly quarrels that have blotched professional history, have, as a rule, sprung from patenting. The mistake of Morton's life was the patenting of the discovery of ether. As a free gift to humanity its source would never have been challenged; but so soon as the process of exclusion began, the right to priority of conception was immediately challenged, the war was on, and he did not reap the reward he would have done.

How different the case of vaccination and the Roentgen rays! Given freely to the world, man, relieved of the peculiar ills to which these ideas have been applied, rises from his sufferings and calls their creators blessed.

Suppose Black and Johnson had sold office rights for extension for prevention in cavity preparation! How much good work would have been made impossible in general office practice, and how much human suffering must necessarily have gone unrelieved.

The present case in litigation of the International Tooth Crown Company is the *reductio ad absurdum* of patenting in our profession. It is carrying the reason of the patent advocate to its logical limit—and what an absurd and monstrous limit that is no practicing dentist doubts. The greatest possible transgression of professional ethics is that one of us should bargain with and sell to an outsider, and by so doing enable that outsider to fatten off professional labor —that he should put it within the power of that outsider to embarrass and mulct his fellows to an immeasurable degree. This is what the notorious case of the International Tooth Crown Company seeks to establish. This case has, however, done one good thing for the profession—it has formed the dark background which brings out in brightest colors the high character, unselfish zeal and manly worth of one of our number. It has afforded us the opportunity of seeing put to actual, practical and material test that professional honor which is so dear to us all. Too much can never be said in appreciation of Dr. J. N. Crouse in the battle which he is still fighting against this moneyed corporation. Like a mighty bulwark, strengthened by a high principle, he has placed himself between the profession that he loves and the invading power, nor time, nor discouragements, nor the seductive allurements of material settlement out of court have been able to affect his noble stand. Such a man, as old Horace says, has built himself a monument more lasting than brass, which neither time nor the corroding elements can ever destroy.

I am quite aware of the fact that many among those dentists who are opposed to the principle of patenting instruments and methods see an extenuation in the first case which is lacking in the second. Of course when a man comes into the office and offers for so much to show how to do so and so, any well principled dentist, be he ever so saintly, feels like indulging in a little muscular christianity for the sake of a good cause, and introducing that brazen applicant to a taste of strenuous life which would land him suddenly on the other side of the office door. This glaring case of barter, this undignified peddling, has no possible excuse and needs no further discussion.

But the man who patents an instrument says, "A patent preserves the purity of make of my invention. Without it any cheap or faulty imitation can be made, which in some cases would work great harm to the profession." This at first seems an exceedingly proper contention. It is necessary that a creation which is the outcome of labor, mental and physical, should not be tampered with, and that its integrity should be kept intact, in order that it may best serve the purpose for which it is formed, and, too, in strict justice to the maker. If this integrity can be preserved *only* by a patent, then a patent by all means. But *is* the patent the sole shield to the inventor in such a case? By no means. Every dentist knows or should know that the publishing of a new instrument in the records of any society in the presence of a third party saves the instrument to the inventor. With such means of protection available, one must reasonably believe that the man who patents does so not for protection, but for profit only.

Then, again, even if we grant that patenting is absolutely necessary to prevent change in make of instruments, whatever benefit is gained thereby is surely more than offset by a possible harm which restriction may work. Patents stop the progressive movement of improvements, and if all inventors had used them the profession would have been deprived of much excellence on its mechanical side, for it is out of the labors of many minds that the best finally appears. Hardly ever does one mind conceive all the possibilities of the thing conceived, but it is out of the added thought and improvement suggested by the experience of one here and one there that final perfection is attained. Patents in their selfishness would stop all this and halt with greedy hand possible progress in the profession.

Furthermore, many patents are taken out not to protect a device

but to prevent its manufacture. This, as you know, is not to protect the profession in any way, but in order that the sale of some device already on the market may not be affected. You can easily call to mind a number of things which you cannot procure, simply because the manufacturer will not put them on the market or allow others to do so. Think of Darwin or Agassiz or Roentgen holding back any discovery or book in order that some previous thing might first be disposed of!

Those who are in favor of patenting always love to make a parallel argument between the copyright and patent. The principles governing these things are not parallel. There are some essential differences that I desire here to note, and in this connection I desire to pay tribute to Prof. E. Townsend, who has written a comprehensive thesis upon this subject which can be found in the *Dental News Letter,* 1853. In substance he says: "Copyright does not forbid translation into another language; it does not forbid bona fide abridgement. It does not—in the nature of things it cannot—forbid any other use or employment of the ideas and language of the book except for tradesmen profit in the republication. Thoughts and words are of necessity free. Once born into being, they may be repeated all around the world, serving all the uses of which they are capable. Copyright of the original books protects them and their author from nothing but the booksellers' piracy. The ablest works of elementary science that are now copyrighted are but new arrangements of principles and doctrines that have been a hundred times in like manner secured to as many authors and compilers of them, and they still lie open to a hundred or a thousand new forms of combination or presentment, with no better chance of being withheld from general use than they had at first. Nothing in authorship is or can be monopolized. No sooner is a new view of a scientific truth uttered than ten thousand minds are busy molding it into as many forms, each capable of all the special use there is in it. In fact, science admits of no monopoly; no law or penalty either can or attempts to restrain the property and use of its truths to the service of its first discoverers. Once ushered into being, they are yours and mine and may be servants unto thousands. Whatever is essential in them is subject to remolding, recombination, reapplication in all the forms that diversity of mind can give. It is not so with levers, springs, wheels and pulleys, and the combination of elements which patent rights protect.

"The points of contrast which are important in my apprehension may be thus briefly stated. A patented machine cannot be translated into other forms, as of oak wood into walnut, iron into copper, or buckskin into goatskin, where the modus operandi and the effect are precisely equivalent. This would be an evasion and an infringement; but the most literal translation of a German work into English, or of any language into any other, is allowed by copyright. A machine cannot be abridged in bulk, retaining all the principles, copying the mode of combination and preserving the identical operation thereof. A book may be so reduced and the act is not punished or prohibited. A machine cannot by the addition or subtraction of a lever, pulley, wheel or screw be turned upside down or 'tother end foremost,' and thus be made to produce the same effect precisely, by such merely formal alteration, and escape the penalty of the patent laws; but the entirety of a book may be so employed; every idea in it can be used by an altered utterance and the identical effects be all derived without offense against the statute. Of a machine the essential characteristic is protected against any mere formal modification. Of a book the essence and operative power is the very thing that is not protected. The form, which in all scientific treatises is as nothing in the way of its public and unrestricted use, is the only thing secured by copyright. A bookseller may not reprint a poem, but an author may write it down to prose, and sell it as his own; or an orator may rehearse it with all its power to please, convince and move his audience, and he is blameless before the law. A book with the warning of the Government on its flyleaf is no terror to the free intelligence of the reader. MIND is not forbidden to appropriate and employ at will, for either pleasure or profit, anything it contains in any manner in which the material may be beneficially used. The substance and spirit of science and literature are thus in happy keeping with their divine nature, born free, and cannot be brought into bondage to any man. The particular form which their first revealer gives them only is his exclusive right, and that form being all that he can claim, every plodding bookright who follows him may have as great a pecuniary benefit of his toil, by a new and useful reproduction of his thoughts, as the parent brain itself can claim or hold. The clear conclusion, therefore, is that copyright is not a conflict of interests between an author and the profession for which he labors, or the public which he serves, but between him and the mechanics who print and bind

the volumes he produces, and the trader who vends them in the market.

"But the patentee of a machine, or novel composition of matter, stands to the world a monopolist of all the value that there is in his particular invention. He sells the right to use it, and the public buys it upon the commonest principles of trade; the community surrender their own equal liberty of discovery to its antecedent advantage in point of time and compromise the conflicting rights by a concession which they deem a fair or at least an effectual one. Such is the difference between the two. If this grand distinction were not somehow felt, we should perhaps see less of the ambition of dental patentees and of their advocates to exalt the mechanical monopoly which they approve to the level of the more unequivocal and unquestionable right of authorship in the creation of their genius and the products of their toil. Thus patent right and copyright are broadly different in all their bearings upon the interests of the profession and upon the relations of the practitioners of dentistry."

Too much praise cannot be given to that class of men in our profession who are constantly giving to us without cost the product of their thought and research. A roll of honor should be formed, and foremost on it should be placed the names of men who have illumined our path and lightened our labors by their free contribution to our calling. Distinction in a liberal profession should not be measured by the size of one's practice, but rather by his contribution to the profession of which he is a member. All honor, then, to those who have given freely to the uplift of our calling without hope of reward. Let us not forget this prince of givers.

I believe that in the past dentists who patented sincerely felt that they were benefiting the profession, and at the same time thought it but fair that they should seek to get some remuneration for the time and money spent in making this device. Many by experience have seen the error of this course. Several years back (1889), at a meeting of the New York Odontological Society, while this subject was under discussion, Dr. S. G. Perry, inventor and patentee of the separator and engine, said: "I have never received a penny for it, except for the transfer of the patents, and, gentlemen, it is the regret of my life that I ever took a penny for it. I would give a great deal to-day if I had never taken the patent for either the engine or the separators. I did not appreciate then as I do to-day

the danger to our profession from this mania of taking patents." Such testimony—and doubtless there are many who are in the same class with Dr. Perry—is valuable as coming, not from the theorizer who has nothing at stake and pleases himself with the utterance of glittering generalities, but from one who out of the fullness of actual experience places himself against the restricting patent on a high plane of ethics which a patentee never can reach.

For, after the last analysis, it is the welfare and future of our profession which all individual interests should observe. "Men may come and men may go," but the profession, like the brook, goes on forever. The individual with his ideas and acts is important just in proportion to the strength and uplift which those ideas and acts give to the upward movement of the group of which he is one. The soul that feels its individual responsibility to the sum total of life can feel no greater happiness than in the thought that the world has been made a little better because it has sojourned here awhile. The professional man with the genuine scientific spirit can have no greater reward than that his profession has pushed an inch forward because he has helped. We work in the present, but it is the future for which we build. "Projected efficiency," let them sneer who will, is the keynote of all existence. This is the principle, whether advanced or not, which has enabled us to fall heirs to so much that is great and good. It must be our greatest pride, then, to pass on to those who come after gifts that have increased in value under our conscientious care. This subject of patents has vexed and retarded our profession long enough; can we not in these first years of a new century with one united effort bravely face and finally settle it? This is my earnest appeal to-day, for I am truly convinced that not until we do this can we really attain the professional heights to which dentistry lays claim.

Discussion. *Dr. C. P. Pruyn,* Chicago: When many of us took up the practice of dentistry we entered the ranks of a trade or an art rather than a profession, but as the years have passed the trade element has been considerably eliminated and a professional spirit has been developed. The question that now presents itself to us is this—are we a profession or are we a trade? If we are a trade and work as tradesmen, the procuring of patents is right and proper, but if we are a profession, if we are doctors in the true sense of the term, if we are teachers as we should be, the obtaining

of patents upon those instruments and appliances that are needed for the amelioration of the ills to which humanity is subject is entirely out of place. We are a fraternity, and the bond of brotherhood is strengthening from year to year. We have a noble inheritance from our fathers, who took the stand that gladly out of the abundance given them they would distribute unto others, and if it were not so where would we be to-day? As it is now when the great majority of dentists get a new idea they gladly give it to their fellows, and that is the true spirit of the professional man. As a little illustration of this thought, I herewith present to this society a prescription for a mouth-wash which I have been working upon for a good many years. This is a strong preparation, and only a small amount is needed. It is very good for inflammation of the mucous membrane wherever located, but if used through the nose it should be weaker than for a mouth-wash.

Boracic acid.....	3 drams
Oil cassia.....	1 dram
Carbolic acid.....	1 dram
Chloroform.....	1 dram
Alcohol.....	3½ ounces
Oil peppermint.....	10 drops
Glycerin, q. s.....	8 ounces

M Sig. Put ½ teaspoonful in ½ glass tepid water as a mouth-wash.

Dr. J. N. Crouse, Chicago: I wish to compliment the essayist upon the eloquent manner in which he has expressed his thoughts, but I am obliged to differ with him in the position taken. He spoke of the freedom of the dental schools. I haven't discovered that dental colleges are offering education free; it is quite as expensive as any other line of schooling, but it should be paid for, as I don't believe in charity institutions except for the poor.

To take up the professions, lawyers are permitted to take out patents if they want to, and clergymen may copyright books in this or any other country, for a copyright extends to all countries in which it may be taken out. The fact that the medical profession don't take out patents is easily explained—they have nothing to patent. Surgical instruments are being patented, and surgeons are using patented instruments, because they are more perfected and better made than those that are not. I do not recall the case of any

professional man writing a book and not having it copyrighted, that is, if it were worth being published, for no publisher will take a book unless he is protected by copyright. Inventions are patented for the same reason. No manufacturer will perfect an appliance, and spend the necessary money manufacturing it and bringing it to the attention of the profession, unless he is protected for a reasonable length of time. By an invention I mean something with novelty enough in it to be given a valid patent. I can seen no reason why a man with ability enough to invent new things should give his time and brains and energy without remuneration to the profession, which is not altogether appreciative. Furthermore, he can't give an invention to the profession, for what can the dentists do with it? They can't make the tool or appliance, and the fact that it can be patented makes it possible for that invention to be perfected, manufactured and put in our hands in a useful form. The essayist stated that the inventor claimed that a patent preserved the individuality of his invention, and he admitted that would be a good reason if there were not a remedy, but the remedy which Dr. Bentley gives is faulty. He states that if an invention is described before a dental society and published in its transactions it is preserved to the inventor. This is not the case, for if not patented it becomes public property after two years and any man can then do whatever he pleases with it. However, if it is a complicated piece of machinery no dentist can do anything with it, and no manufacturer will touch it, because he cannot afford to spend thousands of dollars in perfecting, manufacturing and advertising it when any other manufacturer can step in at any time and profit by his work, trouble and expense. Consequently, if the invention is not patented the profession lose the benefit which would come from its possession. One reason why the dental profession have made advances, and are each year better prepared to serve their patients, is because our instruments have been perfected to the highest degree, more so than surgical instruments.

However, I do not wonder that the dental profession have cried out against the patent abuses imposed upon them. Leaving out the case of the International Tooth Crown Company, which fleeced us with a lot of worthless patents, dentists are at the present time paying thousands of dollars to the supply houses on patents that would not stand a test in court. Just to give the profession an object lesson I put on the market the "Fellowship" broach at $1.00

per dozen, to compete with the Donaldson broach, for which the S. S. White Co. had always charged $2.50. The White Co. had had a monopoly because of the patent and had collected nearly $200,000 in royalties, but I knew that the patent was no good, as I and a great many other dentists had barbed broaches before the Donaldson instrument was ever heard of. After a long fight the court decided that the patent was invalid. These are the kind of patents that I do not believe in, but patents on novelties are all right, and the inventor should be protected and rewarded. The essayist dwelt at considerable length on giving and receiving. It is a poor rule that will not work both ways, so I would ask what return the dentists make to the inventor who gives them the benefit of his work and ability without protecting himself by a patent?

Dr. G. V. Black, Chicago: Patents are purely a commercial arrangement, and as such have no business in a profession, but those things which we delegate to the commercial man to prepare for us should be patentable, but there should be no patent on office rights or on anything that must be applied to the human body to complete it. It is on the ground of expediency—what is best between man and man—that the patent right is established.

Dr. G. D. Sitherwood, Bloomington: Do you mean that an artificial limb or ear, or the making of a bridge or a plate should be patentable, or merely an instrument or something of that kind?

Dr. Black: The fitting of an artificial limb to the body and the application of a dental plate to the mouth should not be patentable, but there may be certain features of the substitutes themselves that are properly patentable.

Dr. Edmund Noyes, Chicago: If the different standards between trades and professions are mere matters of assumption, or conventionality, or custom, they are not of much consequence and need not be considered. It is simply because of the more important interests which are committed to the care of the professional man that his obligations to his profession and to the public are different from the obligations of a business man to his competitors and customers. It is more important that a patient should receive competent and honest service at your hands than it is that a man who goes into a hardware store should be given a stove that has been honestly made. The interests in the first case are so much more important that the professional man by common consent is under obligation to serve humanity with primary reference to its needs

and with secondary reference to his own compensation, while it is universally conceded, in fact if not in theory, that the business man has primarily to consider his own interests, and he may suppose that the customers with whom he deals are competent to look out for themselves. This is why a doctor must do many things that a mechanic or merchant is not called upon to do. Now we can readily see the importance of making distinctions between those patents upon office rights, or those which require some portion of the human body as an essential part of the patentable article or process, and those patents which relate simply to articles which can be manufactured and sold complete. No one will contend that a dentist or physician may not patent something which does not relate to professional service and profit, but he should be barred from taking out patents on office rights or processes, and I do not believe that he should patent an invention which relates to his profession. Why should the man who has made some mechanical invention like a clamp, or a pair of forceps, or an instrument for administering anesthetics, have any more right to profit by that invention than the man who invented the step cavity in filling teeth, or those men who have worked their whole lives and spent their money on experimental apparatus and scientific research—who perhaps have laid the very foundation on which some important material has been developed. For instance, in one case we know of, an alloy which is in almost universal use. Why should they give all this with absolute freedom to the profession? Why should Miller or Andrews or Cook work in the laboratory to find out about bacteria without hope of pecuniary reward when the same obligation does not apply to the man who invents a new instrument?

Dr. Crouse: Do they do that without remuneration?

Dr. Noyes: Practically they do. I should be very glad to know that Dr. Black has had the pecuniary reward from his work for the profession that he would have obtained had his time been devoted to his private practice. I am not aware that these men have received from the profession or from the public any direct pecuniary compensation for their work. If we are professional men, as distinct from merchants or artisans, we must assume some obligations and make some sacrifices which they are not called upon to make, and these sacrifices in respect to inventions are a part of our limitations and duties.

Dr. J. W. Cormany, Mount Carroll: Would Dr. Black hold the

position he does to-day if he had not made the investigations he did years ago?

Dr. Noyes: The reward which these men have had is just as open to the man who invents an instrument and gives it to his profession, in proportion to the value of his contribution.

Dr. F. B. Noyes, Chicago: We do not hold the ideal of our profession high enough. It is altogether too evident that dental students consider that the money they pay for their education entitles them to carry away from the colleges everything that is not chained down, but no fee can pay the debt to our teachers. We owe something to them and to the long line of men who have devoted their lives to research for the profession. The man who simply practices dentistry for what he can make out of it is just as much a commercial man as the one who patents a device.

Dr. C. N. Johnson, Chicago: I think that a man has a right to patent an instrument, but I should rather see the patent taken out by the manufacturer than by the dentist. The statement is made that a dentist who spends his time to perfect a mechanism of value to the profession should be compensated, but just as much time has been spent by dentists in the study of the principles of practice that we are following to-day as in the evolution of our instruments, but I don't know of any instance where men have been paid for that particular kind of study. It requires a good deal of expenditure to perfect and bring an instrument before the profession, and if the dentist does the work he should be recompensed by the manufacturer who brings out the instrument.

Dr. J. E. Nyman, Chicago: If Dr. Bentley practices what he preaches he fills teeth for the cost of the material used. Our profession is a combination of art and craft, and we have to deal with practical things more than with fanciful ideals. A patent on a mechanical device is justifiable, and it isn't given to allow a dentist to satisfy his greed, but to repress the rapacity of the manufacturer. Unless the inventor can control his appliance it will be imitated in the cheapest sort of way, and then it won't do the work for which it was designed. Dr. Crouse would never have attacked the Donaldson patent if the broach had been sold at a legitimate profit. Dr. Bentley is wrong on copyrights, as a man can't translate a book into another language if it has been copyrighted in that language. These laws are passed to give people compensation for their work, and if you don't offer incentives to inventions you won't

have anything new. The only nations that don't have patent laws are half-civilized ones that haven't sense enough to get them up.

Dr. Bentley, closing discussion: Despite all that has been said I have not been swerved an inch from the ground I took in my paper. There can be no comparison between the ethics of a business and those of a profession. When a merchant deceives you as to the value of a piece of goods you suffer no physical injury, but are simply deprived of your money. On the other hand, when a patient comes to you he reposes full confidence in your ability and integrity, and if you deceive him he can have no choice in the matter, as he has no knowledge of your efficiency. Dr. Nyman said that we take our patents to hold the manufacturer in check, but the greed of the manufacturer is no greater than that of a dentist. I make the unqualified statement that it is unethical for a liberal profession to take out a patent on anything, be it instrument or method. The code of ethics of the medical profession states, in substance, that any physician taking out a patent upon an appliance to be used by his associates shall be considered ineligible for membership in a medical association. The medical profession has outgrown this matter of patents. Some may say that ours is a mechanical profession, but there are almost as many mechanical appliances used in surgery as in dentistry. I want to see a tendency created and supported whereby a man who has anything to give to the profession will give it freely and without hope of reward, save that which inevitably comes to the worthy. Where is the equity in the case between the man who exacts tribute for a patent and the one who spends his days in the laboratory hunting for nature's secrets? Dr. Black has used a dangerous word—expediency. There is always a right and wrong side to everything, and no question is ever settled upon compromise. This question of patents is not one of expediency but of right—right as measured in the larger sense—right to be ranked with the liberal professions. Even upon scientific instruments no patents are taken out, for scientists will not patent them, and the greatest telescope maker in the world never took out a patent. Each year men come into our colleges who have been educated in the business world, and when they graduate they carry those commercial ideas into practice. Sooner or later we shall have a lot of commercial dentists unless our educators show them that such ideas have no place in the profession. More attention should

be given in the colleges, in practice as well as in preaching, to the chair of ethics.

GENERAL NERVOUS MANIFESTATIONS IN RELATION TO THE JAWS AND TEETH.

BY GEORGE V. I. BROWN, D.D.S., MILWAUKEE. READ BEFORE SECTION ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION, JUNE 10-13, 1902.

In a paper read before the Section on Neurology and Medical Jurisprudence of this Association in 1898, and this section in 1897, I outlined the theoretical propositions upon which were based methods of treatment adopted by myself in the care of nervous affections, intimately related to disturbance caused by the habit of grinding and clinching the teeth, many general, as well as local, manifestations being attributed to this etiologic factor. The term "jaw-strain" was used in the same sense as "eye-strain."

Attention was called to the fact that wherever the natural teeth remain in the mouths of patients suffering from nervous disorders, it is noticeable that the occlusal surfaces show abrasion, due to constant grinding and rubbing, the effect of extreme pressure brought to bear during paroxysmal muscular effort or long-continued, excessive pressure, a condition frequently resulting from hours of pain and suffering. This has frequent mention by writers as a marked symptom among those who are victims to the various neuroses, but in no instance do I find where an author has thought fit to reverse the order of things and make the habit of the jaws which is responsible for this condition one of the etiological factors in bringing about the disease, rather than a result, as it is generally held to be. This hyperkinetic condition of the muscles of mastication is undoubtedly due to irritation of the brain-centers governing these muscles, whether as a symptom of other neural disturbance, or *vice versa.*

Since the papers referred to were written, an almost continuous observation of such cases, and the practical application of these principles, have convinced me more and more that the importance of the subject is but little conceived by those who treat, as all must who treat at all, neurotics or even victims to nervous functional diseases of lesser degree.

It is difficult to convey a due appreciation of or even to satisfac-

torily account for general nervous manifestations, often due to dental irritation, slight thought it may be locally. Yet it has occurred repeatedly in my experience with patients, who have been relieved by treatment applied solely to the etiological factor, that where for any reason the exciting cause was allowed to return to the original state, or the habit of irritation by grinding certain affected teeth was permitted to be resumed, the symptoms of pain, hysteria, muscular spasm, neurasthenia, or whatever they might have been, returned at once, and again disappeared after local relief or correction was given.

The rationale of the jaw-muscle habit in its pathologic significance is thus explained. Whether central irritation be excited by some other primary disease and the peripheral irritation be a secondary result, or the local disturbance an exciter of the cortical centers, the effect as a factor in disease is manifested in several distinctly different forms, which are as follows: 1. Through the pterygoids a lateral grinding motion of the jaw of man takes place, which if pursued at night is easily noticeable by the grating sound, and usually attention is called to it. If, however, the masseter and temporal muscles are called into unusual activity, the result is that the jaws are firmly and tightly pressed together without sound, and therefore often unnoticed, the pressure varying in individuals from two hundred to two hundred and seventy pounds. With the jaws closed normally and occlusion perfect this force would be comparatively equally divided among the whole number of teeth. If, however, as usually happens in these cases, the jaws be shifted slightly to one side, a little forward or backward, then certain portions of the individual teeth are brought together and they alone must bear this tremendous force. Ordinarily the membrane surrounding the root is capable of withstanding a considerable amount of traumatic irritation. But by continued application of this pressure, especially when weakened through other general conditions, as of circulation or otherwise, the power of resistance becomes impaired, and one of two things must result—either a local disturbance, made manifest by elongation of the tooth and soreness to pressure (pericementitis), a not generally serious affection, accompanied sometimes by localized pain, usually comparatively easily remedied, or, as I have believed, a direct communication of this irritation to the larger nerve-trunks, to be by them carried to the other parts.

2. In deformities of the dental arch disarrangement of the teeth

must change the angle at which the stress of antagonism is applied. If the crowns or cusps occlude irregularly, whether upon the lingual, buccal or labial aspects, the bell-shaped or contoured natural crowns of the teeth are crowded together, and the pressure exerted by the muscles of mastication tends to crowd out of line the teeth so situated as to be most subject to this crowding effect. The roots, being conical in form, are likewise in some degree forced away from the apical portion of the alveolar socket, and though in the apical space (so-called) allowance is made for a limited amount of movement in the line of the long axis of the root, there nevertheless results a measure of nerve-stretching where the branches of the fifth communicate through the apical foramina.

3. Exhaustion. Eye-strain continues only in the day-time, whereas the jaw muscles work day and night, such patients being most weary upon awakening in the morning, and the pain being most marked at that hour.

4. It is only reasonable to suppose that, with the force of the jaws pressed tightly and continuously upon certain teeth, the moment such pressure is removed the immediate result would be a hyperemia of the pericemental and other vessels about the roots; frequent repetitions of this would bring about a chronic inflammation, evinced sometimes by interstitial gingivitis, and in others a low degree of inflammation that through peripheral excitation gives rise to many reflex symptoms.

5. When it is remembered that the lower jaw at birth is much larger than the upper, and that the bones of the face are much smaller proportionately at this period than the bones of the head, it will readily be conceded that that constant pushing upward of the wedge-shaped inferior maxillary between the bones of the superior maxillary, increasing its diameter posteriorly as well as laterally, must exercise a radical influence not only upon these, but also upon all the bones that are associated to form the nasal meati and the nasal septum which divides them. Thus the nasal, maxillary, lachrymal, ethmoid, inferior turbinated, palate, and sphenoid bones, which form the nasal meati, are affected in shape and relation by any force which would alter the position of their respective development; and in precisely a similar manner are the vertical plates of the ethmoid, vomer, the crests of the maxillæ, the palate bones, the rostrum of the sphenoid, and the nasal spine of the frontal bone, which combine to form the nasal septum, in all save

the triangular notch of nasal cartilage, changed by any misdirection of energy which may cause a deviation in this dividing wall from its normal position or form.

Both Talbot and Kiernan make clear the fact that periods of stress, as they denominate certain stages which markedly affect developmental and other physiological processes, have much to do with health and the form as well as the character of the growth of both mind and body of the individual. There seems to be little question as to the truth of these statements, and if so, then why cannot stress arising at any other period from a most common cause likewise affect nerve-functions and metabolic changes?

Kiernan says, with reference to stress at the time of the eruption of the first molar, "In no small degree the struggle for existence during this period of stress centers around the development and eruption of the first molar. With the eruption of this tooth, premature puberty, sexual precocity, epilepsy, gout, insanity, rheumatism, obesity, and other nutritive degeneracies may occur. All have been charged to the eruption of the first molar, whereas its irregular or difficult eruption is, like them, an expression of constitutional stress. Hygiene at this period means also constitutional mental and moral hygiene. Epilepsy, for example, is not a disease, but a symptom of weakness of certain vasomotor inhibitions. The first convulsion does not constitute epilepsy. Through a law of the nervous system, nerve action, once aroused, tends to repeat itself. In this way are established normal and abnormal habits, of which last epilepsy is one. In its early stages a habit, normal or abnormal, is easily checked. The first convulsion could therefore be prevented were its premonitions known. A recurrence could also be prevented were its constitutional origin recognized. Observation of the general constitution at this time, because of the irregular eruptions of the first molar, would enable the physician to nip epilepsy and many other allied conditions in the bud. Reflex notions, however, must be flung overboard. All irritations should be removed and any constitutional irregularity treated."

If periods of stress so exactly correspond to the different stages of dental development, intra and extrauterine, and if, as has been shown, there are stages in the life of the individual which are marked by the onset of a predisposition to such perversions of nervous activity as are indicated by the investigations of Kiernan, corroborated by similar results reported by Talbot, then the in-

fluence of irritation of the neural mechanism of the teeth can neither be questioned nor ignored as a factor in neurology. It doubtless is an error to suppose that the eruption of teeth at a specific period coincident with the beginning of epilepsy, or any other manifestation of psychopathic or neuropathic condition, is the cause of such disturbance; that the real difficulty attending dentition is itself brought about by the same cause as the disease; but since it is, as a rule, absolutely impossible for the therapeutist to attend prenatal conditions, the point of vital interest and of value to him is that the correlation of the mouth, teeth, and jaw physiological and pathological processes to nervous affections, in one form or another, is almost invariably the rule; that at least in a large majority of cases a measure of relief can be given, and every means of assistance certainly should be opened if the overwrought, highly irritable and hypersensitive nerve-centers are to be given opportunity to rest and regain their normal equilibrium.

Dr. Daniel R. Brower says, "The prophylaxis of epilepsy demands much more attention than it ordinarily receives. A convulsion in the infancy of a child of neurotic inheritance is often the first manifestation of an epileptic tendency, and deserves serious attention. Children of this tendency should be relieved from severe nervous and mental strain. They should be kept from the use of alcoholics, opiates, coffee, tea and tobacco in early age and adolescence, and from sexual irregularities and excesses. Phimosis, errors in vision, diseases and deformities of the upper air-passages, or any other abnormality, may demand attention and correction." Surely, if such minute prophylactic measures are necessary, the ever-present, active irritation of jaw-clinching and grinding cannot be overlooked, and if carefully attended to would undoubtedly assume an importance far beyond present appreciation.

Dr. Harold Moyer says, "To my mind the central point in the diagnosis of neurasthenia is the presence of the fatigue symptom. Rest is the sheet anchor in the treatment of neurasthenia." Complete rest must comprehend, in the light of what I believe the future will reveal, a consideration of the special muscles now under consideration, as well as others more generally understood.

Without exhaustive reference to authorities, or quotations from the literature of pathologic neurology, which might be continued *ad infinitum* in proof of the fact that unusual activity of the jaw muscles is an almost invariable symptom associated with disease

of this nature, it seems advisable to deal directly with the evidence of practical results in the treatment of cases.

Miss C., aged twenty-five years, unmarried, anemic, very nervous, tall and thin; affection of the throat under treatment for some time without relief. Pain in occipital region most severe, but during the attack would spread to the frontal and other regions of the face. Nervous storms of this character were quite severe and of frequent occurrence. Correction of occlusion by grinding, particularly the tooth most affected by the habit, gave relief. Result: gained thirty-five pounds in flesh, and has almost entire freedom from pain.

Mrs. M., aged about fifty years. Family of four children; history of many years of headache with short intervals of freedom from pain; attacks showed tendency to increase in severity and frequency at the time my treatment began. Support was given by the aid of an upper plate, constructed in such a manner as to relieve the anterior teeth from the strain of occlusion. Result: almost complete freedom from pain for several months past, notwithstanding severe trial by illness of one and surgical operation upon another of her family.

Mrs. T., mother of a family of children grown, and a grandmother. Thin, anemic and very nervous. Treatment consisted in corrected occlusion, and fastened teeth loose from pyorrhea. Result: increase of ten pounds in flesh, and general improvement in health.

Miss M., aged twenty-five years. Tall, well-formed, but history of headache almost constantly for many years; sometimes very slight, but on the least unusual effort of excitement very severe; digestive disturbances quite marked; many kinds of food could not be tolerated; susceptibility to irritation very great; during the more serious periods of pain drugs were frequently used to give relief; both upper and lower arches were regular, except the failure to erupt a right superior bicuspid, which caused slight disarrangement of occlusion. *Treatment*—Habit of clinching the jaws in subconscious moments and during sleep made it necessary to insert a soft rubber pad to protect and relieve the irritating influence of direct tooth antagonism in occlusion. This was and is worn constantly at night. Steady pain has entirely disappeared. Recurrent attacks seem to have nearly ceased. Stomach has lost its

irritability, and at this time (after many months) the patient seems quite well; general health and spirits uncommonly good.

Miss ——, aged — years. Extreme nervousness, manifested in a variety of ways; anemic; lower arch crowded; grinding habit marked, and reported by her sister to have been unpleasantly noticeable during sleep. Appliance was adjusted to expand the arch, thus to give more room for the teeth, and in this way to remove the stress by relief of pressure from crowding, also to make occlusal irritation impossible. Result: complete disappearance of the unpleasant symptoms, full restoration to health, and considerable increase in flesh. After several months the appliance was removed with the purpose in view of ultimately being able to dispense with its assistance. In a short time there was a return to the former condition, which is again being relieved by the use of the appliance.

Miss F., aged thirty-three years, came in charge of an attendant, almost unfit to be alone, because of mental disturbance, notwithstanding the fact that a history of the case showed a number of months' treatment in a sanitarium without relief. Family history fair; a suspicion of specific history on her father's side, he having died of hemorrhage thirty years before. Her mother died of uremia, and was morphin subject. *Previous History*—She was an only child; scarlet fever at the age of five years; her ears commenced to discharge two years later, and continued discharging until two years ago. She had grip one year previous to my seeing her. She had been a mouth-breather since she could remember, and when first seen was just convalescing from a severe attack of nervous prostration. She sought relief from deafness, and to regain health sufficient for the continuance of her occupation as dressmaker. *Treatment*—A saddle-shaped upper arch was widened, and occlusion with the lower made as nearly perfect as practicable. Nose and ear treatment was thus facilitated, with extremely gratifying result. She was able to dismiss the attendant after about ten days' treatment. Six months later she reported herself quite well, increase in weight fifteen pounds, and able to work regularly without ill effect. This patient has since married and seems to be entirely cured.

Mr. H., aged about fifty-five years. Family history not very clear. A brother's child was mentally defective. Married and had several children, all in good health, as far as could be learned.

Patient powerfully built, and aside from the peculiar affection from which he suffered was in good condition; a moderate drinker of beer; no intemperance so far as could be learned. The pain had begun in the left side of the face five years before he came to me in July, 1900. The symptoms are best described by reference to the illustration, which shows the distortion of the facial and eye muscles upon the affected side, which took place during paroxysms of pain. These came and went at intervals of about one and a half to three minutes. At the time of my first treatment, and for a few months before that date, the symptoms had extended to the throat, the hyperesthesia making it almost impossible to swallow even liquid involving the pharyngeal muscles, and thus exciting excruciating pain. Upon examination it was found that all of the teeth of the upper jaw, from the left superior central incisor back, had been extracted in the hope of giving relief. The remaining tooth was elongated so that it extended below its next neighbor, the right superior central incisor, about one millimeter, and this notwithstanding the fact that the incisal portion showed the effect of abrasion very much, having been worn away by the grinding of the teeth of the lower jaw, which also accounted for the elongation, due to thickening of the pericementum about the apex of the root. In order to give temporary relief, operation was performed with the surgical engine, by opening into the superior maxillary bone and severing the anterior branch of the trifacial. The pulp was removed from the left superior central incisor, and it was ground down so that it could no longer meet the teeth of the lower jaw in occlusion. All of the symptoms have disappeared. Twice since the time of treatment the patient returned with slight premonitory attacks of pain in the same region, and it was found that the affected incisor had worked its way down until it was again striking the lower teeth. Each time it was ground slightly, the relief being immediate and complete.

Miss F., aged thirty-five years, August, 1900. Family history unknown; height about five feet six inches; thin, anemic. Burning sensation and hyperesthesia of left side of tongue, which had begun about twelve months previously and had steadily increased. Six months later the same sensations were experienced in the throat, extending entirely across, and becoming so marked in severity as to threaten a complete nervous prostration. Upon examination an ill-

fitting piece of bridgework, extending from the left superior cuspid to the first molar upon the same side, showed to a very noticeable degree the marks of the grinding habit due to evident malocclusion. Removal of the exciting cause and correction of occlusion gave relief. The patient reported in June, 1902, entirely free from the old symptoms and in good general health. Her weight, which was one hundred pounds at the time of the beginning of treatment, increased to one hundred and twenty pounds, with a complete disappearance of all nervous manifestations.

Mr. ——, aged about twenty-five years. Paralysis of the right side of the face had come on gradually, having first been noticed about seven or eight days before coming under my care. Careful examination by a neurologist failed to show a reasonable cause for such a condition. Patient's health seemed to be good; reflexes were found to be normal, and as he was not at all alarmed about his condition, there seemed to be no psychic element which could be held accountable. Examination of the eyes by an oculist failed to discover any exciting cause in that direction. Upon examination it was found that through malformation of the jaws only the molars met in occlusion, it being impossible for the patient to bring the anterior teeth into contact at all. In the hope that some relief might be given, the molars were ground down sufficiently to equalize the stress of occlusion. No other treatment was given. The symptoms began at once to disappear, the muscles regaining their normal usefulness in the same manner that it was lost to them.

How far it is either safe or wise to claim dental or maxillary irritation as exciting causes in such cases as the last one described I do not know. One other case of paralysis of the facial muscles, that had continued for a much longer time, the patient being a young married woman without children, and without, so far as could be learned, specific disease, in whom the grinding habit was very marked, was given a very considerable measure of relief immediately by extraction of a lower molar, which it was deemed wiser to extract than to attempt to treat under such grave conditions. Full restoration to usefulness of the muscles upon the affected side returned shortly after the alveolar socket had been healed. In another, a young lady aged about twenty-two years, there seemed to be a particularly intimate association between a paralysis of the entire right side, including the extremities, which

lasted for several months, and was most puzzling to the physicians in charge, because no brain lesion could be diagnosed, although for a long time it was believed that the etiologic factor was of that nature. Her recovery, however, would seem to have disproved such a theory.

Many such cases as the ones described could be cited that have come under my care during the last five or six years, and though results were not always as markedly successful as might have been desired, nearly all patients have been materially benefited, and other more general treatment assisted, while a very considerable number have been cured without other therapeutic measures. I am fully aware of the psychic element that is omnipresent in dealing with neurotics, and am also sufficiently impressed with the idea that one is apt to find too much in his own special field. Therefore it is my wish to emphasize in conclusion the following summary: The jaw habit may in some instances be an etiologic factor in functional nervous disarrangements, or more often perhaps only a symptom. But in the therapeusis of such diseases every method of treatment might reasonably be made more effective if its correction received due consideration. No dogmatic rules can be laid down by which ill effects of this muscle habit may be overcome. Careful study of individual characteristics requires the adoption in different instances of a great variety of methods, simple in themselves, yet requiring the greatest care and delicacy in order to be effective. One of the simplest and most beneficial appliances, quite harmless and yet capable of very general and useful application, is a hard rubber plate, with soft velum rubber border extending over the occlusal surfaces of the teeth. The palatal portion gives a sense of firmness and security, and the soft rubber covering to the crowns of the teeth makes grinding or serious injury by undue irritation impossible. It need be worn only at night, and thus gives little serious inconvenience to the patient if carefully adjusted.

A consideration of the methods of treatment would require much more than the limits of this discussion prescribe, but every one who undertakes the application of any corrective measures to the dental organs should remember that in the highly sensitive state common to these patients it is quite as easy to do harm through failure to perfect the occlusal mechanism as it is to benefit by accuracy and manipulative dexterity.

DENTAL NOMENCLATURE—WITH REFERENCE TO ITS DEVELOPMENT, BEARING ESPECIALLY ON THAT OF DESCRIPTIVE DENTAL ANATOMY, CAVITIES AND INSTRUMENTS.

BY G. W. DITTMAR, D. D S., CHICAGO. READ BEFORE THE ILLINOIS STATE DENTAL SOCIETY, AT SPRINGFIELD, MAY 13-15, 1902.

The development of dental nomenclature very naturally has impressed upon it the characteristics of the growth of the profession. It is a historical fact that dental operations were performed thousands of years before the Christian era, yet it was not until a trifle over a half century ago that the dental art assumed the dignity of a scientific profession. Likewise with dental terminology, a few specific terms necessarily were employed, but most of these were vernacular and unscientific in their application.

It is unquestionably true that the nomenclature of any art or science is not a creation per se, but a slow and steady growth, which starts from a small beginning and develops gradually. Up to fifty years ago dental terminology was in an embryonic condition. Since then the development of the dental science has been so rapid that many of the terms chosen to convey the necessary ideas have unfortunately been selected without a proper regard for their fitness, and thus we have a multiplicity of words used to designate one and the same thing, terms really inapt, wrongly applied, or etymologically incorrect.

This deplorable condition was caused to a marked degree by numerous instructors in dental colleges and writers of dental literature, working at about the same time, who in endeavoring to describe the ever-developing facts and ideas found it necessary to frequently coin new words or make new applications of existing terms. Though realizing the need of a uniform and adopted nomenclature, many of these men, having introduced and used their particular set of terms, many of which were unscientific and inaccurate, clung to them as a workman clings to old and long-used tools in preference to superior new ones with which he is unacquainted.

Realizing the chaotic state of affairs, and also that "in scientific statements or descriptions exactness and precision of language is of the utmost importance," the American Dental Association in 1876 appointed a committee of three, consisting of Drs. Jonathan Taft,

Wm. H. Atkinson and Homer Judd, on Dental Nomenclature and Terminology. This was the first concerted effort to establish a uniform nomenclature, and in the following year Dr. Atkinson submitted a report on the subject. In it he made but a slight attempt at producing a definite starting point for so gigantic and necessary an undertaking, though the report contained some excellent suggestions, from which I take the following: "We may lay it down as our first business, as founders of nomenclature, if we seriously undertake that task, to keep clear of special theories in respect to facts, and about which there is or may be dispute, and confine ourselves strictly to furnishing the instruments, or that armory of vocal implements, by which anybody whosoever, with whatever theory or opinion, may be able to present intelligently his ideas to all others."

Instead, however, of confining himself to dental nomenclature he introduced and in several subsequent reports continued the presentation of Universology, which is the science of universal classification, and "Alwato, or the science of the natural and appropriate naming for all the results of classification, in whatsoever department. As music has laws, which had to await their discovery by human observation, so it is now discovered that the true laws of language have always been latent in the organic structure of the organs of speech, and Alwato is the one language for all the world, which is to result from the full discovery and practical coordination of those laws." If it had been or should be possible to devise, adopt and put into application "Universology and Alwato" for the purposes of general scientific nomenclature, it would indeed be a boon to our own as well as to all other scientific callings, but it seems the labors of Dr. Atkinson were not appreciated; possibly they were premature—at any rate dental nomenclature as it exists to-day has profited little by his scholarly efforts.

In 1885 Dr. W. O. Kulp submitted to the American Dental Association a very excellent report, in which he recognized the lack of system and the necessity of a uniform dental terminology. Though his report was brief, confining itself to descriptive dental anatomy, it dealt with words which have formed the nucleus of our present dental nomenclature. Unlike the previous reports on this subject, it received commendable consideration and elicited a healthy discussion.

Nothing of much note was again submitted to the profession until 1893, when at the World's Columbian Dental Congress Drs. G. V.

Black, W. O. Kulp and Garrett Newkirk presented papers which have proved to be the corner-stones upon which our present dental terminology is based. Dr. Black in his very excellent report discussed in a most thorough and convincing manner the need for a definite system of nomenclature, the general principles underlying its development, and the fixing of a scheme or standard of beginning, suggesting the following: "1st—The plan of nomenclature shall be the same in the several languages. 2nd—Use words derived from the Latin or Greek, whenever such words are available, making use of the root, and giving it such terminations as may be suited to the language in which it is employed. (Note. When a word in the Latin or Greek form has come into favorable use in any langauge there will be no necessity for changing it to the vernacular form.) 3rd—When for any purpose a word from the Latin or Greek is not available, agree upon a word from another language and use in the same way. 4th—When it is impracticable to use the same word in the several languages, these should be as nearly exactly translatable as possible. 5th—Adopt such general and specific rules employed in other sciences as may be adapted to dental nomenclature. 6th—Create such specific rules for the naming of things discovered in the future, as shall secure their universal use and prevent the duplication of terms. 7th—Make rules for the translation of names arising in one language, which from their form or for other reasons cannot be used in some other language."

An appended exhibit of the nomenclature of dental anatomy, compiled from the works of eleven authors, showed plainly the superiority of Dr. Black's over any of the others, which were more or less incomplete in classifying and naming the teeth; naming their parts; roots; surfaces of crowns and surface markings; the pulp and peridental membrane; names of cusps and angles, and the expression of directions. An exhibit of the general plan of naming carious cavities was also added, which classified cavities, and following this, cavity wall nomenclature; the depth and angles of cavities; the division of teeth into thirds, for the purpose of intelligently locating a certain position, and words used to properly describe the cavities in teeth, were each made interesting topics.

Dr. Kulp's paper covered much the same ground, he having elaborated extensively along the lines he presented in his report in 1885. While to a marked extent it agreed with that of Dr. Black, and on the whole showed careful preparation, yet he introduced some very

cumbersome combinations. For example, he spoke of the "third molo-buccal margin of an upper second molar," instead of the "disto-buccal angle;" and of the "third molo-proximal surface of an upper second molar," instead of simply the "distal surface" of an upper second molar.

Dr. Newkirk's paper dealt with the nomenclature relating to forms of the dental arch and special positions of the teeth. Some new and excellent thoughts were presented, and a number of newly applied terms suggested, which certainly were more concise, definite and self-explanatory than those previously used.

In 1894 the American Dental Association adopted a resolution providing for the appointment of a special committee of nine, to be known as "The Committee on Terminology," whose duty it should be to compile and submit a carefully prepared report at each annual meeting of the Association. This committee consisted of Drs. S. H. Guilford, M. L. Rhein, T. E. Weeks, C. L. Goddard, Grant Molyneaux, Louis Ottofy, A. H. Thompson, D. R. Stubblefield and E. C. Kirk; and they saw fit to build to a great extent upon the corner-stones contributed by Drs. Black, Kulp and Newkirk. In 1895 this committee submitted to the Association a report which contained 506 technical words, alphabetically arranged, designating the parts of speech and giving their proper pronunciations and most applicable definitions, taken from such dictionaries as the Century, Dunglison, Gould, Thomas, Webster and the Standard, and from such writers as Tryon, Cope, Owen, Scott, Black and others. It was indeed an admirable effort, and formed a solid foundation upon which a truly dental nomenclature is gradually building. The following year this special committee submitted a similar report, comprising 136 words.

In 1897 the American and Southern Dental Associations united, forming the National Dental Association, which, in order to further develop the work so well begun, adopted a resolution providing for the appointment of a standing committee of three, whose duty it should be to submit at each annual meeting a carefully prepared report on dental terminology. The succeeding year Dr. W. E. Walker read a paper on "Cast and Model," and at the next meeting another on "Articulation and Occlusion," which, while not developing anything new, carefully and thoroughly covered the ground. Since then nothing of importance has been submitted to this Association.

Another potent agency in reforming and establishing a more uniform and acceptable terminology was the organization in 1893 of the "National School of Dental Technics," now known as the "Institute of Dental Pedagogics." This organization of dental instructors and authors, meeting annually, and exchanging views, made it necessary for them to adopt terms as nearly uniform as possible, and the effect of this in improving conditions has been manifest by its influence upon the thousands of students attending the numerous dental colleges.

Dr. D. M. Cattell, in a paper on "Operative Technics" read before this body at its first meeting in 1893, called attention to the importance of having students familiarize themselves with all the ordinary dental technical terms, so as to be able to comprehend their meaning, properly pronounce, and use them intelligently in the construction of sentences.

In 1895 Dr. Cattell in "A Talk on Instrumentation Technics" entered a new field, by introducing a scheme for a systematized nomenclature and classification of dental instruments.

Dr. Black three years later presented a paper along these same lines, elaborating extensively on the scheme introduced by Dr. Cattell. In this report, published in the DENTAL DIGEST for January, 1898, he not only classified instrument names, but presented concise and definite principles for the construction, classification and naming of instruments. He devised a simple and accurate method of describing an instrument by a formula which consists of three numbers—e. g., Hatchet excavator 12-5-6; the first number (12) representing the width of the blade in tenths of a millimeter, thus designating it to be 12-10 of a millimeter wide; the second number (5) representing the length of the blade in millimeters, and the last number (6) the angle of the blade in relation to the long axis of the shaft, given in centigrades.

Excavators were divided into three lists—Ordinaries, Specials and Side Instruments. (Note. This classification is from a revised list.)

- Ordinaries
  - Hatchets.
  - Hoes.
- Specials
  - Chisels.
  - Spoons.
  - Enamel Hatchets.
  - Gingival Margin Trimmers.

Side Instruments { Discoids. Cleoids. Extra specials not belonging to the regular special list.

The ordinaries are made in six sizes, ranging from 4-10 of a millimeter wide and 1 millimeter long (4-1) to 14-10 of a millimeter wide and 6 millimeters long (14-6), and each size is made in four different angles, viz., 6-12-18-23 centigrades.

Thus: 4-1-6, 12, 18, 23
6-2-" " " "
8-3-" " " "
10-4-" " " "
12-5-" " " "
14-6-" " " "

The six sizes in four angles make 24, and these, made in two classes, viz., Hatchets and Hoes, make 48 instruments, which constitute the entire set of Ordinaries.

You will notice that the first number in the formula for the smallest instrument is 4, and that these first numbers increase in a twofold ratio up to and including 14, viz., 2, 4, 6, 8, 10, 12, 14, and that the second number is 1, and that these increase in a single ratio, viz., 1, 2, 3, 4, 5, 6; and that each size is made in four different angles—6-12-18-23.

The Specials are made in three sizes and two angles, viz.,

10-6-6, 12
15-8-" "
20-9-" "

Note. Straight chisels are included under Specials. Binangled chisels are made at an angle of 6 and the rest of the Specials at an angle of 12 centigrades only.

The Side Instruments can be made to any definite formula.

The following rule for designating "rights and lefts" in instruments was introduced: "The instrument which when held as a pen, with the point downward, has the convex side of the blade to the right is called a right-hand intrument; and the blade which has its convex side to the left is the left-hand instrument. In beveled rights and lefts the beveled side corresponds to the convex side of curved blades."

By means of this very simple and accurate instrument nomen-

clature dentists can now definitely designate their wants. The system is scientific and broad enough to be applied to almost all dental instruments. Pluggers, burnishers, finishing knives, files, etc., can all be given their proper formulæ, and when these are given in connection with the rest of the nomenclature, which for convenience in teaching has been divided into

Order names { which designate the *use* of the instrument, as plugger, excavator, burnisher, etc.

Suborder names { which designate the *manner, position,* or *purpose* of use, as enamel hatchet, gold plugger, etc.

Class names { which describe the *working point* of the instrument, as hatchet, hoe convex-faced, serrated, etc.

Subclass names { which designate the *number of angles* leading to the working point, as monangle, binangle or triple angle,

the student, office assistant, fellow practitioner, or instrument-maker understands us exactly when we say, "Give me a monangled hatchet excavator 6-2-12," or a "triple-angled hoe 12-5-23."

To my mind no one factor has been so potent in simplifying and making uniform the teaching of instrumentology and cavity instrumentation, as well as having produced the manufacture of scientifically formed instruments, as the work on instrument nomenclature introduced by Dr. Cattell and so thoroughly completed by Dr. Black.

At the Philadelphia meeting of the Institute of Dental Pedagogics, in 1899, a committee consisting of T. E. Weeks, D. M. Cattell and J. A. Dale submitted a syllabus on Operative Technics, which comprised the most complete report on operative dental nomenclature yet presented. Systematicaly arranged charts, embracing all the latest and most appropriate terms used in descriptive dental anatomy, instrument and cavity nomenclature, were included. It was the last and the best work on the subject ever presented.

It has been my aim in this paper to review briefly the progress that dental nomenclature has made, especially since it was taken under consideration by the two great national organizations referred to. Some admirable work had been done previous to this time by such men as Jourdain, Tomes, Harris, Hayden, and numer-

ous more recent writers, by whom many of our present terms were employed. We also noticed a unique monograph, more especially on the nomenclature of dental anatomy, written by Dr. Judd and presented to the St. Louis Dental Society in 1876. All these had their influence, but the two organizations of which I have spoken, most of whose active members are either instructors in colleges or writers of dental literature, have been instrumental in bringing about the gratifying results manifest during the last decade.

While there now exists a nomenclature which is for the most part simple, scientific and accurate, especially from the standpoint of operative dentistry, much yet needs to be done to eliminate the unscientific and inaccurate terms which cling to the other like barnacles to a ship and impede its progress. I refer to such terms as "Sixth year molar," "Twelfth year molar," or worst still, "Six year old molar," "Twelve year old molar," "Wisdom tooth," where "First permanent molar," "Second permanent molar" and "Third molar" should be used; the use of "Eye tooth" and "Stomach tooth," for "Upper" and "Lower cuspids" respectively, "Nerve" for "Pulp," "Dead tooth" for "Pulpless tooth," "Ulcerated tooth" or "Gum-boil" for an "Alveolar abscess," "Fang" for "Root," and many other equally unscientific and incorrect terms; or such inaccurate expressions as "Double teeth," where "Molars" are indicated, or "Crooked teeth," where "Malposed teeth" should be used, or to say "the second tooth came inside or outside of the first," when instead of so unscientific and absolutely wrong an expression we should say, "The permanent tooth erupted lingually, or labially, or bucally of the temporary tooth."

In a paper of this nature it would be too great an undertaking to review the development of the nomenclature of prosthetic dentistry, orthodontia, dental pathology, materia medica, therapeutics, and the numerous kindred subjects, so in passing I will simply say that the nomenclature of these subjects has also made marked progress in the past quarter of a century, but that there too exist many unscientific terms and expressions which need to be eliminated and more accurate ones adopted instead.

To further remedy and finally establish a uniform national dental nomenclature, I believe the course to pursue in the future should be similar to that followed in the past, in that the selection, but more especially the *adoption,* of new and newly applied terms should be made only through the recommendation of the National Com-

mittee, after its due and careful deliberation, and then if every dental teacher and writer of dental literature would adopt such terms, as well as the profession generally, it would be but a comparatively short time before the ideals of the pioneers of this magnificent though laborious undertaking would be realized.

In conclusion, I append a list of nouns, adjectives, and a few verbs, which constitute the technical terms from which our present descriptive dental anatomy and cavity nomenclature is taken:

Nouns.—Anatomy, Angle, Alveolus, Apex, Arch, Axis, Bicuspid, Canal, Cavity, Cementum, Cervix, Chamber, Cingulum, Contact, Curvature, Cusp, Cuspid, Dentin, Edge, Embrasure, Enamel, Fissure, Fossa, Foramen, Gingiva, Groove, Gum, Horn, Incisor, Inclination, Line, Lobe, Margin, Membrane, Molar, Neck, Pit, Plane, Point, Process, Pulp, Ridge, Root, Septum, Space, Sulcus, Surface, Thirds, Tooth, Tubercle, Wall, Wrinkle.

Adjectives and Prefixes.—Apical, Axial, Anterior, Buccal, Bell, Cavo, Central, Conical, Deciduous, Dental, Developmental, Distal, Fifth, First, Five, Foraminal, Four, Gingival, Incisal, Inferior, Inter, Labial, Lateral, Left, Lingual, Lower, Marginal, Middle, Mesial, Multiple, Oblique, Occlusal, Peridental, Permanent, Posterior, Proximal or Proximate, Pulpal, Right, Secondary, Second, Single, Sub, Succadaneous, Sulcate, Supernumerary, Supplemental, Third, Three, Transverse, Triangular, Temporary, Upper.

Verbs.—Articulate, Calcify, Occlude.

In combining these terms, making compound words, the final "al" in all but the *last* adjective is substituted with "O;" thus, in combining "mesial" and "occlusal" it should read "mesio-occlusal," or in combining "buccal," "gingival," "axial" and angle, it should read "bucco-gingivo-axial angle," etc. Thus by properly combining these words all the descriptive terms necessary can be formed to accurately convey to the reader or hearer exactly the thoughts intended.

Discussion. *Dr. F. B. Noyes,* Chicago: In writing upon nomenclature some men have tried to create a complete new system of descriptive words, but such efforts have "died a-borning." The conspicuous thing in the writings of Dr. Black is that he has reviewed the words which were in common use and has picked out those which seemed most clearly and concisely to express the necessary idea. The words which he has coined are comparatively

few, and only where no word existed to cover the idea. After a selection of this kind has been made and tested, and has been recognized by the representative organizations of the profession, it becomes not only the privilege but the duty of the profession to use those words and drop all others. It is our duty to know, understand and use those technical words which have been established by the national bodies. The dental profession has been criticised for its propensity to coin words, as each writer seems to never be satisfied, but to hold it his privilege to select a new word to express an old idea. This merely causes confusion and is futile.

The efficiency of an instrument depends upon three things—the width, the length and the angle of its blade. If we think definitely about our instruments we select the right one to do a certain piece of work, but if we think vaguely about our instruments we guess at the shape required and pick up several before we get the right one, thus wasting time. The training of ourselves to use and understand instrument nomenclature in practice is the surest way to rapid and correct cavity preparation. The rapid operator will make a filling with three or four instruments while a slow one will have his cabinet turned inside out.

Dr. A. D. Black, Chicago: The title of this paper indicates very clearly what the author is writing about, and I wish to congratulate him, as titles do not generally do this. In dentistry we have three distinct nomenclatures: First, one for comparative dental anatomy, which applies to the teeth of man and other animals, and is based on the development of the various tooth forms from the primal protocone; second, one for human dental anatomy, which applies more particularly to the minute description of the teeth of man; third, the nomenclature, if we may call it so, between dentist and patient. This last is accountable for our retaining many of the old phrases, and if we would explain some of these words a little more carefully to our patients the majority of them would be glad to use the right terms.

The subject of instrument nomenclature is one which has never before been presented to this Society, and the essayist has necessarily gone over the ground so hurriedly that I doubt if those members who are not familiar with the subject will get much out of that part of the paper. I would suggest that all would do well to study this question, as Dr. Noyes has said, for with it one can

operate faster and more accurately. It isn't necessary to have a complete set of instruments, as you can take almost any portion of the entire number and have a set that is complete in itself and satisfactory.

The future development of dental nomenclature rests with three agencies, namely, the Institute of Dental Pedagogics, the dental journals and the dental societies. Perhaps the first is the most important, but journals cut a considerable figure, and in view of this morning's discussion, showing how much license an editor has with a paper presented to him, I would suggest that an occasional editorial on the papers appearing in a journal might be a good thing. Perhaps, also, it would be well to have a committee to submit a report on the nomenclature used in the meetings of this Society, simply as a friendly criticism.

Dr. D. M. Cattell, Chicago: I wish to say that the ideas in the talk on instruments and instrumentation which I made before the National Association of Dental Technics were gotten from Dr. Black, and it was with his consent that the matter was brought out at the time. A few years ago an eminent teacher said that "the sign-board of a profession is its nomenclature." If that is true, how careful we should be of our sign words. Another prominent writer has remarked that "If a man knows the nomenclature of his profession he is well acquainted with the subject or subjects of his profession," so that using the proper terms would indicate that we are well versed on the subject of which we are talking.

Dr. G V. Black, Chicago: It might be inferred that a distinctly dental nomenclature is newer than it really is. As a matter of fact, we are more indebted to John Tomes for the nomenclature that we are using to-day than to any other man. Not that he wrote any treatise on dental nomenclature, but in his writings upon dental subjects he introduced the words which formed the basis of our present nomenclature. He introduced the words "mesial," "distal," "buccal," "lingual," etc. Owen gave us the word "dentin." Our nomenclature is to-day used largely by the French, but, while it is generally understood by German dentists, it is not used very much in that language. Eventually, however, we will understand this language of dentistry, no matter in what tongue we may hear it.

Dr. J. N. Crouse, Chicago: How far are the different colleges in harmony on this instrument scheme? Of course, if the various schools will agree on a system and a style of instruments, the boys

will all adopt same and in a few years it will be universal. I can see the value of having a uniform system of instruments in all the colleges.

Dr. Black: I am responsible for this instrument nomenclature, and my idea has been to introduce a system whereby we may arrive at definiteness in teaching. There are already a number of schools using the system, and it is only a question of time before it will be universal. We do not expect the older practitioners to take it up, but the boys in the schools, the faculties of same and the more recent graduates have learned it. Any of them can talk together about instruments and know just as definitely the particular instrument that the other refers to as one carpenter would know what another meant if he spoke of a three-quarter-inch auger. It is necessary that one should realize the value of the millimeter in order to read these forms easily and definitely. I worked over the matter for a long time trying to use the parts of an inch for a measure, but the millimeter as a unit is far preferable. Where an old practitioner does not want to change his instruments it would be an easy matter to stamp the respective formula upon those which he likes to use.

Dr. Dittmar, closing discussion: It has been stated that you probably would not understand the subject of instrument nomenclature very thoroughly by simply hearing my paper. That will apply to the paper as a whole, for I could only consider the matter in a general way. I purposely did not consider comparative dental anatomy, because of the magnitude of the subject and because it does not play so important a part in the vocabulary of the average dentist.

GOOD FELLOWSHIP.

BY C. R. TAYLOR, D.D.S., STREATOR, ILL. READ BEFORE THE ILLINOIS STATE DENTAL SOCIETY, AT SPRINGFIELD, MAY 13-15, 1902.

One of the strongest elements that has always worked for the success of our state dental society is the bond of good fellowship among its members. This factor was prominent in its organization and was clearly recognized at its inception by the first evening of each meeting being set apart for social intercourse and fraternal greetings. And it should be our purpose at each meeting to show our good will and appreciation of each other by cultivating that

fraternal spirit which will lead us to regard those engaged in the same professional calling with feelings of generosity and noble regard, which can be known and grown only by association and fellowship. Good fellowship is dependent upon good ethics, and there can be no good ethics without a proper consideration of "the other fellow." Good fellowship is the synonym of right living. There can be no high professional attainment without a true professional spirit, and that spirit is largely dependent upon associated effort. We are not to be satisfied with professional skill or individual morality and ethical conduct, for our age demands the highest attainment of skill, morality and ethical culture from us as a profession. We then owe it to our profession, and we should work for the highest social and ethical standard among the members at large.

There is no particular virtue in asceticism. Even old Diogenes with his lantern had to get off his perch to find an honest man. Character is not perfected in isolation. Life is not a mechanism to be set apart and left to run automatically. Life is a purpose; an involution of spiritual forces needing the energizing influences of personal association for its complete evolution. All life and form is dependent in some way upon association. No one can eat of the fruit of knowledge and duty and remain a recluse. The tree of life grows out of the soil of experience. Any person in a community who considers just himself and his own welfare will in time become isolated and friendless.

The essence and sweetness of life does not consist in what one shall eat and drink and wear, neither in great possessions, but upon nobleness of character, sympathy and simplicity of living. We are told that Solomon in all his glory was not arrayed like unto the lilies of the field which simply grew in the true beauty of their nature.

Let us remember that we are going this way but once, and as we pass through life illuminate our pathway with kindness and friendliness. "He who does a good deed is instantly ennobled," said Emerson, and good fellowship means doing and receiving good. Modern psychology teaches that hate can be turned into love by thinking, speaking and doing the desirable thing, so to be a good fellow one must be directed by a well-instructed conscience, endeavoring each day to do the best, cultivating thereby a better fraternal feeling and confidence for and in his fellows. One must

not do to others, not even a quack, what he would not have them do unto him. Good fellowship needs no written code of ethics, for it means doing good and avoiding evil in professional life. It calls for nobler manhood, greater knowledge, higher wisdom, sweetest kindness and loving charity, with finer and grander ideals of life. It is the divine element in man finding comfort, strength and oneness in association. It is the larger self seeking perfection through association and brotherhood. It makes us not only more considerate in our fraternal relations with our brother dentists, but it should make us more thoughtful and kinder toward our patients. Our views of life are broadened by fellowship. There is a culture which cannot be obtained by isolation.

Work is the touchstone of man's greatness. Work is not to be estimated alone for what it brings, but for what it does for a person. No man ever attained greatness in any direction without work. It is impossible for it to be otherwise. Browning says, "'Tis not what man does that exalts him, but what man would do." The person who is satisfied with present attainments cannot secure greatness, for his tasks become a burden or commonplace unless he is constantly advancing in his calling. Do better and better work each day if you would find your professional life a joy.

There is a comradeship in work that makes us better dentists because it creates in us the desire to become more worthy of the esteem of our colleagues—and they should be our colleagues in fact, that is, our associates in professional life. Good fellowship will generate in us a desire for self-culture and refinement which are much to be desired. It means that each of us is to be and do the very best we can to each and every one with whom we come in contact.

The dentist ought to be clean physically, morally and mentally, the soul of honor and the very best of fellows, for no one comes so close to people as the dentist to his patients. It obligates us to be honest and truthful in all we do for rich and poor, cultivated or uncultivated, vicious or virtuous. No matter what our patients are or do, our obligations to them are the same. There is no calling or profession where good will should prevail more than among dentists. There is seldom any reason for the dentist to come in conflict with his brother practitioner unless he is looking for trouble. In the past many of our fraternal and benevolent organizations grew out of the brotherly spirit that was fostered among men of

the same calling. That desire for spiritual kinship should be ours and it will unite us in the bond of good will and friendship. Unprofessional conduct seems to have a degrading and injurious effect on the character of those who indulge in it; so much so that as soon as competent men descend to improper advertising and other unethical conduct the more thoughtful class of people shun them, and thus they lose that aspiration and inspiration that come from good associations with the best patients and with their professional brothers. The more our patients demand of us, the greater our endeavor to rise to meet those demands. *Cheap work makes cheap dentists.* The operations to be performed should be based upon the needs of the patient. Our duty is to advise the best that can be done for each individual case; the remuneration is a secondary consideration.

Deception is a poor investment. A real quack, whether he advertises or not, is one who buys and sells his patients as a grocer does his potatoes. Dr. Edmund Noyes has well said: "There is but little use in a description with much detail of the requirements of professional morality in the treatment of other practitioners. No man can avoid transgression unless kindness and charitableness are rooted in his character and find constant illustration in his conduct. It is, of course, proper and necessary that we form an opinion of the professional ability and skill of other practitioners whose work we see or whose voices we hear in the discussion of our societies, but much care and many allowances are often necessary, or we shall hold men in lower estimation than they deserve. Experience and remembrances of our own misfortunes, misjudgments and failures are a great help, and those who have been some years in practice are usually more charitable and more just to others than the young and inexperienced men."

The good opinion of our fellow practitioners is to be more desired than that of anyone else outside of our own family and immediate friends. Let us remember it is better to love than to hate, to say a good word rather than a bad one. He who is always finding fault or harshly and unjustly criticising is writing his own character and epitaph on his countenance and soul, for no one can keep his face from revealing what he is constantly thinking and doing. To our colleagues and competitors we owe a double duty—First, the regard that every man is entitled to from every other gentleman, and, second, the professional courtesy due to a brother

practitioner. One of the great factors in life is associated effort, and its effectiveness is dependent upon good fellowship, and one of the evidences of fellowship is the power of relaxation and recreation. We ought to so order our lives and practices that we can give some of our time to the social life about us as well as to the society work of our particular avocation. Civilization means co-operation, comradeship and fellowship. The lower the order of human life the less united effort is seen. Men ceased to be savages when they learned fellowship. The dark ages became so through lack of fellowship. Men were separated through ignorance and bigotry. Our profession commenced to grow when friendship and fellowship unlocked the door of isolation, and its continued rapid growth has been largely through the cooperative efforts of society work. The wise man is he who sometimes suspects his own knowledge and methods and looks to others for something better. Go to society meetings though you have to deny yourself something else, for in that condition you can get the most out of the meetings. So from a purely selfish basis we owe it to ourselves as well as to our comrades to become more social. You see it is impossible for the unethical to assist much in the advancement of the profession, for they are the natural Ishmaelites of professional life. Their hands are against every one and every man's hands are against them.

There are international, national and state associations that have done much to enlarge the views and purposes of our profession, but there is none that has helped so much to allay ill feeling and professional jealousy and thus promote true fellowship as the local and city society. The reason is easily found—it is because they bring those who are direct competitors close together, and as men come to know each other they find they have much in common, and the only reason there may be for any unfriendly feeling is from ignorance and selfishness. It will be found that men cannot meet each other often in a social and professional way and afterwards say unfriendly things without losing self-respect, and no one is entirely lost until he loses his own self-respect. The Bard of Avon has said: "To thine own self be true, and it must follow as the night the day, thou canst not then be false to any man."

Man's history clearly shows that he who wrongs others most wrongs himself. We may always remember with profit that the vilest of men have some good points of character and the wisest and best are not at all times great and good. Let us who are try-

ing to practice according to ethical rules keep from becoming pharisaical. May we try to win rather than to drive men. Let us have a good word and an open hand rather than a scowling face and a clinched fist. Why should dentists practicing in any community hate each other? Will that make competition any less or easier? Will the cutting of prices for reasonable fees help to make the strife less? Will finding fault with those who do charge well for their operations make our lesser fees increase in number by getting them to decrease their fees in size? Let us rejoice that there are those who can command larger fees than we do, and strive honestly to be worthy of better remuneration for ourselves, *remembering we are the ones who make our practice what it is.* We will then find a clientage worthy of our highest fees.

The power of application and work are the greatest factors in one's proficiency and success. He who has these endowments is sure of both. He is more fortunate than the man of talent who lacks this power of continuous labor and concentration, for the greatest genius in life is work. The tendency of special work is to make a man narrow in thought and sympathy and to overcome that desire to read and study other things outside of our immediate specialty, and extend our sympathy beyond our individual wants.

Let us say the good words now and give our bouquets to the living. The dead cannot appreciate the words of love nor see nor smell the beauty and odor of the flowers of remembrance. How can this fraternal fellowship be fostered? By the older practitioners always giving the glad hand to the younger men as they join the profession and come into any community to live and to practice, and by the young men showing a proper regard for the older ones by calling on them as soon as they decide to locate, and in every way giving expression of good will and friendliness. The old saying that "If you would have friends you must be friendly," is true. Ever man who has a proper regard for others must recognize the rights of others as equal to his own, and if we would always remember those rights, including the right to live wherever one may choose, we should then see that to be mean and ugly is to stir up strife and ill will—unmanly conduct which can end only in hatred. Only that which is good endures and only that which is of real worth succeeds in the end. Let our hopes and ideals of success be governed by generous motives, and then all that is noblest will control and the simply personal will be subservient.

Our greatest satisfaction should consist in acquiring past ideals and bringing to perfection the best thoughts within us. Fellowship is a united effort for wider culture, nobler ambitions, greater emulations and continued progress, which calls for the best in us of self-control, loyalty to the truth, the courage of our convictions, preferring to do the right thing, rather than for selfish aggrandizement, and the adjusting of oneself to other people through the habits of humility, modesty, compassion and kindness, with a desire to know the truth and the courage to live it. The most precious things money will not buy. The markets fail to quote them, yet they are the most desirable in life. Among them are good will, a clear conscience, moral excellence and conscientiousness, with friendship and good fellowship.

Discussion. *Dr. Edmund Noyes,* Chicago: There is another aspect of this subject, as good and bad fellowship are often confused. I think it is bad fellowship when a number of men line up before a bar and have a few rounds of drinks, although it is always spoken of as an act of good fellowship. We have all seen this go on for many years with apparently little harm, but as some of the men have grown older we have occasionally seen them in such a condition as to be a disgrace to themselves and a grief to their friends. Another act of bad fellowship is gambling, and we occasionally see it on the way to and from these meetings. These matters are both social rather than professional, however. A far more important thing professionally is the bad fellowship which we sometimes see exhibited in society meetings, when men criticise a paper or remarks by another man in a manner and spirit which they would not show except for the fact that he is connected with a different college from the one they are with or does not belong to the same clique. I feel free to speak of this point because of the comparative freedom from it which we have always enjoyed. I believe it is the fundamental reason for some of the most acrimonious discords which have occurred in other cities and states. Good fellowship must be founded upon honor, honesty and truthfulness. There cannot be good fellowship between the different dentists in a town if they know that they cannot depend in professional matters upon the good-will and honesty of their fellow practitioners. If the heads of dental schools have not confidence in each other's honor and sincerity, and if there isn't good fellow-

ship between them, there is danger that the competition will be for lowering instead of elevation of standard. Two illustrations of good and bad fellowship occur to me. During the absence from the city for a day of one of our members a patient came in fifteen miles from the country for treatment of a tooth, and was forced to call upon another practitioner. He treated the tooth properly, but took out a number of temporary gutta-percha fillings, which the patient's own dentist had expected to replace with gold, and put in amalgam. Such an act as this makes good fellowship an absolute impossibility. The other case was this—Dr. Black once had a patient who lived half way between St. Louis and Jacksonville. Her mouth was in bad shape and took a great deal of time and careful attention. After a few weeks' work she thought she would go to St. Louis to Dr. McKellops, and Dr. Black assured her that anything which he might do would be all right. When Dr. McKellops examined her mouth and found who had been doing the work he drove her out of his office and told her to go back to Dr. Black.

Dr. T. F. Henry, Streator: When a young man comes to town the older practitioners should extend to him the right hand of fellowship. All the dentists of Streator are on the most friendly terms, and the condition is largely due to Dr. Taylor, for he has always called upon each new practitioner and made the rest of us do the same.

Dr. G. D. Sitherwood, Bloomington: The average young dentist looks upon the state dental society as "all good fellowship, clinic and $5," so the older practitioners must enlighten them upon this point and show them how much good they can derive from attending each meeting of the state society. The older dentists in a town should welcome the newcomer, and, on the other hand, he should call upon his fellows so soon as he arrives.

Dr. Grafton Munroe, Springfield: This city has a flourishing local society and there is the best of good feeling existing among the practitioners here.

Dr. G. H. Henderson, Springfield: I might add that we have had as many as sixteen dentists at our local meeting this last year, although it has been stated that you could not get two dentists here together in one room. What the profession needs is more of a spirit of brotherly love and less of that of criticism.

Dr. A. M. Harrison, Rockford: We have a local society of

sixteen members, and not only do the meetings benefit us professionally, but good fellowship has been developed to the highest point. I have never seen better feeling among the dentists of a town than exists in Rockford.

Dr. Taylor, closing discussion: Good fellowship may not be so pertinent to a meeting of this kind as some other things, yet this society would never have attained its present greatness if it had not been for the good fellowship of the early members. It was the fraternal spirit in them that has made the fine harmony among us and opened the way for the scientific work of this body.

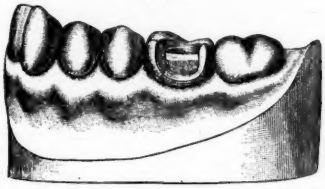
PAINLESS DENTISTRY AND WALL STREET FAKES.—The gullibility of the public is incomprehensible. We have all read the advertisements of "painless dentistry," and these signs attract patrons when all other inducements fail. Yet everybody knows that there is no such thing as "painless" dentistry, and no dentist will claim that there is, no matter what his advertisements might say. If he gets you into his chair and you complain of the pain, he will not deny that he is hurting you, but will comfort you by the assurance that if you had gone to someone else you would have suffered more. It would seem as if no one would be fooled by the signs of these "painless" dentists, but the rate at which they multiply shows that they are good catchers of business. So it is in Wall street. Sharpers and tricksters are constantly sending out alluring invitations to the public to give up their money, in return for extraordinary and absolutely impossible profits. One after the other these swindling syndicates are exposed and go to the wall, leaving their deluded subscribers to suffer. But a new crop of fools seems to be born every day. The fakirs change their names and places of business, but keep their bank accounts well replenished.—*Jasper in Leslie's Weekly.*

ARGONIN.—Argonin occurs as a white powder soluble in warm water, the solutions having a slight opalescent appearance. It results from the action of silver upon sodium casein; is not precipitated by chlorin solutions, alkalies or albumin. It has decided germicidal, antiseptic and deodorant properties, and is destructive to all forms of bacterial life. Solutions of argonin are best made as follows: The powder should be first thoroughly moistened with cold distilled water; then the remaining water necessary to make the desired percentage solution added, and the whole placed in a water bath at 212°, with constant stirring with a glass rod until a perfect solution is obtained, being careful not to use too great a heat and to make the solution only in porcelain or glass. The solutions should then be transferred to colored glass bottles and kept in a cool place tightly corked and from the light. Solutions may be from five to ten per cent. Fifteen grains of argonin contain as much silver as one grain of silver nitrate. It may be employed in arresting decay instead of silver nitrate, and does not discolor the surfaces of the teeth. In fistulous abscess a five per cent solution is efficacious, as is also the case in empyema of the antrum and in pyorrhea alveolaris.—*Therapeutic Progress.*

Digests.

INLAYS—PORCELAIN AND GOLD. By H. B. Tileston, D.D.S., Louisville, Ky. Read before the Alabama State Dental Association, May 15, 1902. So many excellent articles on porcelain have already appeared in print that I will take up the consideration of only a few points in porcelain work which deserve at least a passing mention, and will then give a detailed description of a method of making gold inlays which is unique, definite and satisfactory as to results. The question of high or low-fusing bodies was for a long time a mooted one, but the decision is now practically unanimous in favor of the former. I tried the low-fusing bodies faithfully for several years with results so unsatisfactory that I finally abandoned porcelain inlay work altogether for a time. The chief objections were the extreme friability of the material and the fact that colors which matched the tooth nicely at first would fade

FIG. 1.



Showing preparation of cavity in second molar.

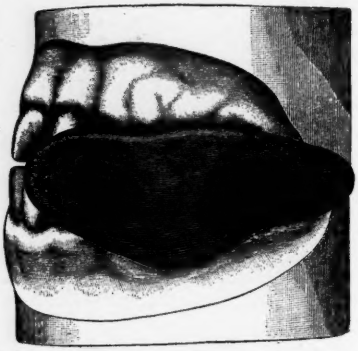
out and soon become unsightly. There was also a decided tendency in the material to become porous in the baking, with the result that the surface of the inlay would after a time be covered with minute black specks. Even the high-fusing bodies are not entirely free from these faults, but the later product of the manufacturers, together with improved methods and appliances, particularly the electric furnace, make it possible with great care and skill to obtain results eminently satisfactory.

The use of high-fusing bodies of course necessitates the employment of platinum in forming the matrix. Platinum is not so difficult to manipulate if a perfectly pure article can be obtained, not thicker than one one-thousandth of an inch, and it be annealed properly. It is objected that in cavities having complicated curves the difficulties in the way of getting a perfect matrix with platinum are

insurmountable. The remedy is obviously to eliminate complicated curves and reduce to simple ones by heroically cutting away tooth-tissue, thus changing an unfavorable case to a favorable one. A perfectly successful inlay will be one which under ordinary conditions of observation will be practically invisible; hence a little sacrifice of more or less tooth substance is not a matter of much importance.

I have experimented with the method of taking an impression of the cavity, using cement for the purpose, and from this striking up a matrix, using the impression as a die; or casting cement or fusible metal over the impression and burnishing the platinum into

FIG. 2.



Modeling compound impression and bite in position.

the replica of the cavity thus obtained instead of into the cavity itself; but like the majority of operators I have returned to the former method of burnishing the matrix directly into the cavity in the tooth. The only value attaching to the impression method is to be able to make an approximately perfect matrix which is to be corrected afterward in the cavity itself; but the advantage thus gained is in most instances not worth the additional time required. A modification of the impression method may be profitably employed by taking an impression of the cavity with the matrix in it as follows: After the platinum has been perfectly burnished into the cavity and accurately over the margins, a bit of modeling compound is warmed and pressed into the matrix and out over the margins, forcing the platinum tightly into contact with the cavity walls and margins, where it is held by the finger until cold, when matrix and

impression may be removed together, thus avoiding all danger of distortion. It is then invested with a material calculated to withstand the heat of the furnace, after turning up several corners of the platinum that they may become engaged with the investment. After warming and removing the modeling compound we have not only the platinum-lined cavity exactly as it was in the tooth, but a part of the surrounding surfaces of the tooth as well, which affords a definite guide in restoring contours. An invested matrix can be handled without danger of being bent, and is not likely to be warped in baking. It is excellent practice to bake some high-fusing foundation body in the bottom of the matrix, return to the tooth and correct the margins, then take an impression as described, and invest. This adds another element of certainty in getting a perfect-fitting inlay.

In building out contours it is best to add an excess of body and

FIG. 3.

Modeling compound removed, showing cavity in tooth to be filled with amalgam.

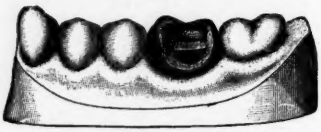
then carve accurately to the desired form, providing a slight excess for shrinkage, rather than to bake on an excess of material with the expectation of grinding down after the inlay is set, as this endangers the friable margins, which are very liable to be chipped and thus ruin what might at first have been a perfect fit. Dr. Capon says it is best to have the porcelain edge slightly below the enamel margin rather than above it, and then to polish the enamel down flush instead of the porcelain. The injunction so constantly insisted upon, to have the enamel margins square and not beveled, cannot be disregarded with impunity if success is to be hoped for. Attenuated edges of porcelain will not stand anywhere, especially when exposed to stress.

It has been frequently stated that the simplest and easiest cases in which to obtain both accuracy of fit and perfection of shade are those which occur upon labial surfaces. My own experience does not accord with this statement. I have found that in both

particulars satisfactory results are more readily obtained in approximal cavities and in incisal corner restorations than upon labial surfaces. With surrounding walls cut square and perpendicular, as they should be, an inlay made for a labial cavity will fail to fit by just the thickness of the platinum used for the matrix; and a color which is entirely satisfactory when the inlay is tried in, because the basal color of the tooth is seen through the translucent porcelain, may be found to be wholly unsatisfactory when underlaid by the opaque cement used in setting. In cases of approximal cavities and restoration of incisal corners or tips, when the matrix has been stripped off, the inlay sets back snugly against the enamel margin and the joint is eliminated entirely. The shade in such cases, once accurately obtained, looks the same after it has been set as it did before. The color in approximal cases should always be a shade or two lighter than the natural color of the tooth.

Just how to obtain colors in an inlay which exactly match the

FIG. 4.



Partial model, showing tooth and cavity of amalgam.

case in hand has been the subject of considerable discussion of late. Some claim that the best results are secured by mixing or blending the shades and then baking them together, while others, notably Dr. Reeves of Chicago, maintain that it is best to lay on the colors separately and by repeated firings get the desired blend through the translucency of the material, the deeper basal shades being modified by being seen through the overlying ones. While this latter method of procedure would no doubt produce very happy results when skillfully done, the nice discrimination necessary for its successful employment is quite beyond the capabilities of most operators. The shade problem is an exceedingly vexing one, especially to the beginner, and its only solution really lies in long practice. Not only must the colors be skillfully selected to suit any particular case, but great care is requisite in the firing, that the delicate shades may be fully developed by just the right amount of heat and time given in the firing, on the one hand, and that the heat be not so excessive as to burn out the colors, on the other. Some of the shades in porcelain

bodies, notably the yellows, burn out readily. Hence it is important for the operator to familiarize himself with the material he is using and how it is affected by the apparatus he may be employing for baking, by experimenting before undertaking a practical case.

In the early days of porcelain work there was much uneasiness expressed as to the durability of the cement attachment of the inlay to the cavity walls, it being stated frequently that the method of setting inlays with oxyphosphate of zinc cement constituted the chief element of weakness in the process. Experience proves such fears to have been groundless. Not only does the cement hold the porcelain in place, but there seems to be very little tendency for the material to dissolve out from the joints. Even the joint at the gum margin, where cement fillings are most prone to fail, appears to be as secure as at any other point. All this, of course, where the

FIG. 5.

Gold matrix, showing hole punched in back.

FIG. 7.

Complete gold inlay.

fitting of the inlay is accurate and where favorable conditions as to dryness have been maintained.

Where there is sufficient material to admit of it the inlay should be grooved and the cavity slightly undercut to afford greater security of attachment for the cement, but upon surfaces not exposed to stress such provision is hardly necessary, especially if a sticky or adhesive cement be used. In incisal corner restorations much more definite anchorage must be provided. The best method in such cases is that suggested and demonstrated by Dr. Capon, of baking a platinum wire into the inlay, to be anchored by a gold filling upon the lingual or incisal surface of the tooth.

Carried away by their enthusiasm, some operators in porcelain make use of it in cases where something else would do better. Small and medium-sized cavities in bicuspids and molars on occlusal or approximal surfaces can be more quickly filled with gold and saved more certainly than with porcelain, because the demands in the manipulation of the latter material cannot always be complied with in these localities, and because porcelain will not bear the force of mastication which normally falls upon these teeth. In

cases of larger cavities, which if restored to contour with gold would require long and tedious operations, or which would perhaps more frequently be restored with amalgam, or in which in many cases crowning would be resorted to, the gold inlay which I am about to describe is peculiarly adaptable.

In preparing a cavity in molar or bicuspid to receive a gold inlay all overhanging walls must be cut boldly away, and all undercuts eliminated with chisels where possible, or filled in with cement where it seems best not to further cut away a wall; the object being to so shape the cavity that an approximately perfect impression of it may be taken. (Fig. 1.) Where large approximal or buccal contours are to be made anchorage must be provided in a step upon the occlusal surface. In some cases the inlay may extend from a mesial to a distal cavity over the occlusal surface. These

FIG. 6.

Gold matrix and contour piece assembled in place in an approximal cavity, with cotton packed between them to produce the desired contour.

latter are the most difficult of all cases, but can be successfully accomplished by this method. All margins should be smooth, and they may be made either square or beveled. In most instances they had better be beveled, especially where a weak enamel wall needs to be supported by the overlapping of the gold edge of the inlay.

The case is now ready for the impression, which, with the bite, is taken as follows: Warm a small piece of modeling compound over your Bunsen burner or lamp at the chair; pinch up a bit of it upon one side in the form of a teat to enter the cavity in advance of the mass so as to certainly fill it all; place in position over the teeth, without drying them at all, pressing down or up as the case may be enough to start it right, and instruct the patient to close the jaws tightly. Now with the finger press the compound over the buccal surfaces and into the embrasures, requesting the patient to do the same on the inside with the tongue, and with the jaws still tightly held together, drop the saliva ejector into the pocket of the

cheek and chill the compound thoroughly with a jet of cold water. (Fig. 2.) It is then carefully removed, the cavity in the tooth filled with temporary stopping and the patient dismissed.

That part of the impression representing the cavity and the entire tooth involved is now packed with copper amalgam (Fig. 3), the balance filled with plaster and mounted on a small crown articulator. In packing in the amalgam a small button should be built up on the base of the tooth to engage with the plaster of the model, so that the metal tooth shall be held strongly in position in the model. The compound being removed, we now have a perfect model of a section of the jaws in occlusion, with the tooth and its cavity made in copper amalgam, upon which we may prepare our gold inlay almost to the point of completion. (Fig. 4.) In some instances the model of the cavity may be slightly imperfect, but gold, unlike porcelain, is tractable and can be modified and corrected in the cavity itself, which is provided for farther along in the process.

Pure gold plate about 36 or 38 gauge is employed in making an inlay shell, which is afterward thickened and strengthened by being partly filled with 20-karat gold or 20-karat solder. Pure gold plate, as thin as 36 gauge or thinner, works very soft and can readily be adapted to all parts of the copper replica of the cavity with burnishers assisted at first by a pledget of wet cotton to avoid puncturing the gold while carrying it into the deeper parts. The gold should be so trimmed as to leave it overlapping the margins everywhere. If the impression is a good one and is carefully packed with the amalgam, a distinct line will be seen on the model indicating the gingival margin of the cavity, and this must be carefully brought out in the gold matrix and a little overlap of gold provided along this margin as well as the others. A hole one-sixteenth to one-eighth inch in diameter is now punched in the gold at that part which covers the axial floor of the cavity. (Fig. 5.)

The next step, the arrangement of the outer piece of gold and the formation of the contour, appears at first sight to be quite difficult, but in most cases it is very simple. In approximal or buccal cavities, with an occlusal step, where the restoration required is not excessive, the result is accomplished readily in the following manner: A piece of the same thickness of pure gold is cut large enough to extend well out into the embrasures, buccal and lingual, and to reach over upon the occlusal as far as will be needed. This is

trimmed along one edge to fit within the line on the matrix piece which marks the gingival margin, but is not allowed to lap over upon the excess left along that margin. The two pieces are now held together with a pair of long, slender solder tweezers and tacked with a tiny piece of 22-karat gold. The pieces thus assembled are dropped back into the copper cavity, when the outer piece will extend straight out into the embrasures and stand up above the occlusal surface of the tooth. Wet cotton is now packed between the two pieces and the gold forced out into the desired contact with the approximating tooth (Fig. 6), when the gold is bent over the cotton and down upon the occlusal surface, and the articulator closed tightly, forcing the thin gold into proper articulating form. Holding the articulator firmly closed, the gold is bent down along the buccal and lingual margins into contact with the matrix piece with a flat burnisher, the cotton being tucked in where it is in the way. At the bucco and linguo-occlusal angles the outer piece may have to be cut a little to properly shape those corners. The outer piece is now trimmed all around so that its margin falls within the excess provided in the matrix piece, and should lie as nearly as possible along the true margin of the cavity. This arrangement makes the placing of the solder easier and provides an overlap of thin pure gold for final burnishing and finish after the inlay is set.

The cotton is now removed either by turning up the occlusal piece or by pulling it out through the hole in the back, and nothing more is done until the patient appears for the second sitting, when it is tried in the tooth and corrected and perfected both as to its accuracy of fit and its occlusion. In most cases it is surprising how nearly perfect both have been made on the model, but it is well always to provide for this final adjusting, when the inlay may be finished and set at the same sitting.

When all desired corrections have been made the edges are soldered together with 22-karat gold and the interior filled almost but not quite full with 20-karat solder by dropping small pieces through the hole in the back and fusing them by holding in the flame of a Bunsen burner or spirit lamp. A cavity should be left just within and about the hole for the cement to enter and help hold the inlay tightly to place in the cavity. The inlay should be set under conditions of perfect dryness, the rubber dam being used wherever possible, and after cement has thoroughly set should be finished like a gold filling. The rougher finishing and the thinning

of the edges should be done with the ordinary gold files before setting, and while the cement is still soft the thin edges should be carefully burnished over the enamel margins all around the cavity, thus leaving practically no cement at all exposed to washing. (Fig. 7.)

In cases demanding excessive restoration of contour, where the method with cotton is not applicable, the desired contour may be built out and carved with wax or plaster from which a die and counterdie are made and the outer piece struck up. Or a quicker way and one giving about as good results is to carve up the contour in plaster poured into the matrix piece, press this into warmed sealing-wax, and then burnish a piece of gold into the intaglio die thus obtained and correct on the model with burnishers and pliers.

I am frequently asked why I use copper amalgam in making the tooth-model. My answer is that any good amalgam will do, or even cement might be used, but for several reasons the copper amalgam serves the purpose best. It sets quickly, neither expands nor contracts, has good edge strength, its initial cost is small, and it can be used over and over again. Where thin enamel walls are to be represented the cement would not be strong enough to withstand the force necessary in adapting the gold to the cavity.

The greater the amount of restoration demanded in a given case up to the point of necessary crowning, the better is this method adapted to its needs, and frequently teeth that would ordinarily be crowned can be much more comfortably and hygienically treated by this means. Moreover, I firmly believe, and the belief is founded upon observation, that a well-fitted inlay cemented in will save the tooth for a longer time than would a filling which would be pronounced to be a good one. In the practice of this method of making gold inlays I have undertaken a great variety of cases upon buccal and approximal surfaces, in localities in the mouth difficult as well as easy of access, and some involving both mesial and distal surfaces of molars and bicuspids; and I confidently offer it as a practical, esthetic and successful means of restoration and conservation in all such cases.—*Cosmos, August, 1902.*

ADENOIDS IN RELATION TO STRUCTURAL CHANGES. By F. Park Lewis, M.D., Buffalo. Read before the New York Institute of Stomatology, February 12, 1902. By adenoids we understand a hypertrophied condition of the lymphoid tissues, normally found in the vault of the pharynx, posterior to

the nasal openings. In structure these tissues form a portion of what is known as the tonsillar ring, composed of the faucial tonsils on either side, the lingual tonsils, consisting of a number of enlargements at the base of the tongue, and the pharyngeal tonsil in the vault of the pharynx. In a normal condition this last, the pharyngeal, or as it is sometimes called, Luschka's tonsil, consists of a number of closed lymph-follicles in the mucous membrane, surrounded by loose-meshed connective tissue. There is a soft variety of what are still called adenoids, which is predominantly an enlargement of this mucous tissue; when the connective tissue is in excess it is quite another thing. It has been deplored that either should be called adenoids, for not even the latter, or true adenoid, is a hypertrophy of the lymph-gland. Practically, it might almost as well be, however, for the contraction and hardening of the surrounding tissue cuts off the lymph flow as completely as if it were the lymph-vessels themselves that were affected. It must be remembered that the lymphatic tract is the channel through which the nutritive elements of the blood are carried to their destination. The lymph in the human body is its life. It is the food of the cell, and upon its free flow is dependent the functional activity and the normal development of every tissue.

The lymphatic glands in the vault of the pharynx are part of a chain extending through the openings of the skull, carrying nutrition directly to the brain itself. Immediately above this region is the sella turcica, which contains the pituitary body. Those of you who have been following modern medical research will remember that in the strange and interesting condition called acromegalia or gigantism, in which abnormal enlargement of the whole bony structure occurs, post-mortem investigations have discovered an enlargement of this pituitary body as a most constant feature.

The pituitary body is composed of two lobes, one of which is true brain tissue and the other a lymphatic gland. The chain is continuous from the lymphoid tissue in the vault of the pharynx, by way of the arterial seats, to the substance of this gland itself. Now, when we realize how profound is the disturbance of nutrition throughout the entire system when the functions of the pituitary body are disturbed, it may be readily understood that any obstruction to the free flow of lymph through glands so nearly adjacent as those of the pharynx might seriously interfere in other ways with the processes of development.

A disturbance of function always precedes a change of structure; and if it can be shown that functional disturbances are produced in adjacent organs by hypertrophies of the lymphoid tissues in the pharynx and the post-nasal space, the conclusion is justified that structural changes must follow in case the hypertrophies are allowed to continue. Should these hypertrophies occur during the period of development in children, we are warranted in making the tentative deduction that where functional disturbances have been observed, interferences with development are likely to occur, as structural changes would in an adult.

Now, clinically the relationship between adenoids and deformities of the face, nose and chest has been so constantly observed that the facial appearance has come to be accepted as a characteristic indication of the presence of adenoid vegetations in the naso-pharynx. Their relationship to some forms of ear disease, while often recognized, has not yet received the attention which its importance demands, while the connection of hypertrophies of this nature with the eye, and its development, has received scarcely any consideration whatsoever. Indeed, I cannot find that this aspect of the subject has been studied at all.

The typical adenoid face is well known. The enlargement of tissue obstructing the posterior nares so narrows the caliber of these openings that breathing is possible only with the mouth partially open. The upper lip is commonly shortened, the lower lip droops. This not only gives a stupid expression to the face, but the mental processes are actually slow. The child finds difficulty in concentrating the attention on any subject, and reflex symptoms of the most varied character are not uncommon. (Among these may be mentioned the night terrors from which children suffer, wetting the bed, persistent headaches not relieved by ordinary measures, marked catarrhal symptoms, etc.)

The form of skull which is found so commonly in cases of this character is that in which the upper jaw—sometimes, indeed, the lower as well—is narrowed laterally. The face is compressed from side to side, the *bony palate* forms a high arch. The teeth are so crowded that they find no room for regular eruption, and to the unpleasant rat-shaped face is therefore added the disfigurement of an ill-shaped mouth with irregular teeth. The high arch constituting the bones of the roof of the mouth presses up the septum of the nose, causing it to deviate, and laying the foundation

for future obstructions in the nostril. In a word, the mechanical fact of crowding the face together throws all the bony structures out of their true relationships, and is the foundation of disturbances of a most serious character.

Much thought has been given to the manner in which this peculiar conformation occurs, and the conclusion seems to be that the obstruction of the nose by the adenoids, necessitating mouth-breathing, has gradually drawn up the as yet plastic structure of the roof of the mouth, until this conformation has resulted. That this is not a complete explanation, although it may be a contributing element, is shown by two facts: first, that the condition is sometimes present at so early an age that it could not have been produced by suction, as this process would necessitate time, and the condition must have been congenital; and, second, because it has been exhibited in branches of families to such an extent that the element of heredity must enter largely into it. [That congenital adenoids are not infrequent is shown by Leopold Chaureau, who reports having made fifty operations on new-born infants.]

A case that came under my observation recently was that of twin children, in one of whom this facial distortion was conspicuous, while in the other the face was broad and the jaws roomy. The first child was a mouth-breather from birth. The mother assured me that this child was the elder, and had been carried low in the pelvis, leading to the possible inference that the weight of the other child by continued pressure might have changed the shape of the skull. The facial conformation characteristic of this condition frequently is found in a mother and her whole family of children. It would be interesting to know whether a narrow pelvis might not sometimes be instrumental in producing the narrow head, which is the foundation of the whole condition.

But while all this affords a fascinating field for speculation and theory, it is not essential that we should know *how* it is produced, it is sufficient to realize that a condition which will so crowd the jaws that the teeth have not sufficient room for their eruption, may also so impinge upon the lymph-channels as to produce strangulation of these structures, with subsequent hypernutrition and the abnormal development of connective tissues, which we call adenoids. Therefore, although the consensus of opinion seems to be that suctional breathing, the result of adenoids, has been the cause of the narrowed face and head, with all the attendant symp-

toms which we have been considering, I cannot but believe it more probably that the reverse is the fact—that the narrow head and face, having been produced by any means whatsoever, would naturally result in obstruction of lymph-passages, with all the varied and unfortunate phenomena which such obstruction implies. (I should say in parentheses that the narrow face with its attendant obstructions is not the only thing that could crowd upon the delicate developing tissues until adenoid growths result, but cases where abnormalities of the face are not present would be the concern of the general physician, not of the dental surgeon, and therefore will not be considered in this paper.)

If my theory is correct its importance to the dental profession is obvious. By an early expansion of the jaw not only is the unpleasant rat-mouth molded into better form and the teeth given room to develop properly, the bony arch lowered and the lips thus brought into place, the nasal septum straightened and the features given a dignity and the mouth an efficiency that they would otherwise lack, but the lymph-channels are unstopped. The first of these are chiefly mechanical results, the latter is concerned with the essential elements of structural nutrition. The different organs that may be affected when nutrition is interfered with, and the various ways in which deviations from the normal occur, interest chiefly, of course, the general physician. But the whole subject, even pushed to somewhat wearisome detail, is of importance to the dental surgeon, as it urges upon him the necessity of recognizing the less striking of these cases. Then, when recognized in instances where the facial deformities are not extreme or but slightly apparent, there is sometimes difficulty in persuading the parents to submit their children to the measures necessary to produce orthodontia. The process is a long and expensive one and entails not a little discomfort, and the parent is likely to urge postponement, hoping that the necessity for the operation may disappear with growth. A knowledge of the remote and serious difficulties which may be the outcome of this condition will afford the surgeon in the several details so many weapons for the defense of his position.

One of the most obvious effects of adenoid obstructions in the vault of the pharynx is the mechanical interference with the ventilation of the middle ear through the Eustachian tubes. According to the location of the adenoid growths, either one or both sides may be involved. The necessity of an unimpeded passage through

the nose, as related to the ear, may be immediately demonstrated in a normal condition by the simple experiment of closing the nostrils. This may be made more clear by at the same time trying to swallow. We find this same process emphasized by a common cold in the head, which gives the sensation known as a stuffy feeling in the head and ears. Now, with enlarged tissues in the throat it requires a very slight inflammation to so interfere with the mouths of the Eustachian tubes as to almost completely shut off the entrance of air. The continuity of tissue readily allows an extension of the inflammation to the middle ear; the drum membrane also becomes inflamed. The swollen tissues of the tympanus ultimately fill with pus, and the pain is excruciating until the membrane is ruptured or an opening artificially made by the surgeon's knife, and we have all the classic symptoms of otitis, with the possible resultant conditions of a chronic otorrhea, mastoid involvement, cerebral abscess, sinus thrombosis, or even general septicemia. [A. Plotier found twenty cases of adenoids in thirty-eight cases of death from diphtheria.]

I think it rarely happens, when children have repeated attacks of earache, that investigation will not show the presence of adenoids. The continued obstruction of the Eustachian tubes without inflammatory complications develops a progressive form of catarrhal deafness, for which no relief can be obtained so long as the obstructions continue. This is a kind of chronic deafness, the origin of which is frequently overlooked. In the course of time organic changes occur in the structures of the middle ear, such as retraction and thickening of the drum membrane, adhesions at the joints of the ossiculæ, and in some cases involvement of the nervous structures of the inner ear itself, with permanent narrowing of the Eustachian tube. It is, of course, then too late for the removal of the cause to produce beneficial results. With a knowledge of these facts it is obvious that no case of deafness in a child should ever be allowed to continue without a thorough examination of the throat to determine whether obstructions are present or not.

The large number of deaf mutes in whom adenoid vegetations are found to exist would seem to justify the conclusion that these obstructions are either congenital or prenatal, and that deafness being present at so early a period allows the unused ear structures to degenerate, while the brain centers for audition remain unde-

veloped. The remarkable experiments of Urbanschitsch in the training of mutes with ear-trumpets would indicate that in many of these cases some degree of hearing might be secured by training the ear, if the auditory passages were free from obstructions.

Of course, it is only before structural changes have taken place that beneficial results may be anticipated. Structural changes take place in a comparatively short time when, added to disuse, we have a choking of the channels of nutrition. The presence of adenoids in the throat may therefore be responsible for structural changes in the ear, and not many years be required in the process. This makes evident the necessity for careful diagnosis and prompt care of young children when these conditions may exist.

It is an accepted idea that adenoids left to themselves will atrophy at adolescence, but this is only partially true. The growth may and probably does shrink somewhat, but when connective tissue changes have once occurred the adenoid persists, although the enlargement of the vault of the pharynx coincident with normal growth lifts the enlarged tissue so that it no longer obviously obstructs the nares, and while it may be producing disastrous changes its presence is often totally unsuspected. I have removed large adenoids from a man thirty-five years of age, very greatly relieving his deafness in one ear, but in the other tissue changes had occurred to such a degree that improvement of hearing was impossible. It is the persistence of these unrecognized progressive tissue changes that lays the foundation for much of the incurable deafness of adult life. And when these are the result of abnormal growths, which may in turn be the result of abnormal mouth development, not only must the growths be removed, but the care of the jaws and teeth must not be too long postponed.

Now, I have reason to believe that the obstruction of the flow of lymph carrying nutrient elements to the ear has possibly as much to do with the results as the mechanical obstruction in shutting off the Eustachian tubes. But upon this subject the final word has by no means yet been said.

When we speak of the eye the dental relationship would seem to be less apparent, but as a matter of fact we find here similar conditions, giving rise to equally marked results, and if my theory is correct, that distorted facial development produces adenoidal growths, and that adenoids are responsible for various eye troubles not hitherto traceable to any direct cause, the relationship is dis-

covered to be intimate. If, as was shown in regard to the ear, functional difficulties arise in conjunction with adenoids and disappear on their removal, and we remember that structural changes invariably follow a persistent aberration of function, we may say that here, too, similar conclusions follow like premises. That is to say, structural changes in the eye may occur as the result of lymphoid hypertrophies. Furthermore, if these obstructions to normal nutrition occur during the plastic period before development is complete, they may interfere with the normal growth of the organ, and arrested development be the result.

No one, two or three cases would be sufficient to prove the relationships of adenoids to disturbances of the eyes, but when over and over again cases that have evaded all ordinary medical or surgical measures have been immediately relieved by the removal of lymphoid growths, the causative relationship would seem to be demonstrated. One of the commonest conditions which I have observed in this connection is that in which the conjunctiva is congested, the eyes weak and suffused, a condition for which local measures have proved in many instances totally insufficient, but which was at once relieved by the discovery and removal of adenoids. [Coppez and Snellen have both recorded frequent instances in which follicular conjunctivitis was associated with post-nasal adenoids.]

A peculiarly interesting case came under my observation recently of a child having a persistent overflow of tears from one eye. The lachrymal duct was found perfectly normal, and the overflow, which had for several years resisted treatment, ceased within a week after removal of a small mass of adenoids that had been too slight to occasion the child any other discomfort. Various weaknesses of the ocular muscles, for which suitable glasses and even operative measures have been unavailing, have regained their normal balance after the nasopharynx has been cleared. Lauren's case, in which strabismus disappeared after an operation for adenoids, and Miles' cases of esthenopia, which subsided after similar operations, lead directly, as do all of these cases, to a consideration of the development of the eye and the causes which may modify it. [Thomas cites a case of a child of ten with divergent strabismus and mental disturbances following meningitis during infancy. After curettage of the nasal pharynx for adenoids the strabismus entirely disappeared.]

At birth the eye of a child is in the same undeveloped condi-

tions as are the other organs. As the child grows the eye develops, enlarges and becomes functionally able to do the work which is required of it. This process of development extends normally through the growing period of the child's life. If for any reason it should be interrupted the eye remains throughout life that of the child. It is then too flat, never having reached a full contour, and is called a hyermetropic or over-sighted eye. Such eyes are peculiarly prone to convergence, and are apt to be dull-sighted. A laryngologist by the name of Ziem has recently made some very interesting experiments that are most suggestive in this connection. He sewed up the nostrils of young rabbits, and found that on the side from which air was excluded the eye remained in a permanently undeveloped condition. In other words, it remained a flat or hypermetropic eye, while that on the opposite side reached its normal development. In my own experience such a large number of these hypermetropic and squinting eyes in children perhaps twelve years of age have been found in connection with lymphoid hypertrophies that it is impossible to believe the association accidental.

If it be true that the nutritive functions of the head are so profoundly impaired by nasopharyngeal hypertrophies, and if it be also true that these are again contingent upon corrigible deformities of the skull, I can only say again, if possible with still more emphasis, that as the responsibility in this class of cases often falls upon the dental profession long before any developments occur which would bring them to the care of the general surgeon, the entire subject must be regarded as of an importance which can hardly be exaggerated.—*International.*

OCCLUSAL ANCHORAGES FOR FILLINGS PLACED IN THE MESIO OR DISTO-OCCLUSAL SURFACES OF BICUSPIDS AND MOLARS. By W. H. K. Moyer, D.D.S., Little Falls, Minn. Read at the annual clinic of the G. V. Black Dental Club, February 20, 1902. For so-called proximo-occlusal fillings in bicuspids and molars, where the material to be used depends on the shape of the cavity for support, there are but two general methods of anchoring—one by means of pits or grooves in the lingual and buccal walls, the other by means of a step cut in the occlusal surface at right angles to the main wall of the cavity. In comparing these

methods we must consider the advantages and disadvantages of each, taking into careful consideration the tests which such fillings must withstand.

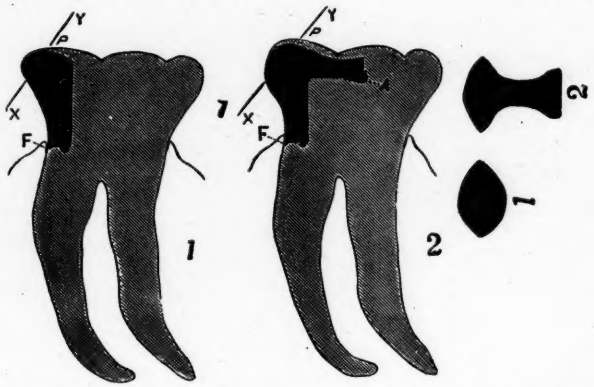
The adult human can exert a crushing force of from 100 to 300 pounds on the posterior teeth. This is measured by means of a machine known as a gnathodynamometer. The machine gripped in an ordinarily strong hand can be made to register barely 50 pounds, so we get some idea of the pressure exerted on the teeth. This force, by the intervention of some hard substance such as a shot or piece of bone in the food, may be brought almost entirely upon one filling, therefore is an accurate gauge of the amount of stress which a filling must be able to withstand.

In the drawings before you sections of teeth with samples of fillings anchored by these different methods are shown, also the direction of the line of force which is most apt to dislodge them. In Fig. 1 is a representation of what I shall term lateral anchorage. The grooves are started at the linguo-gingivo-axial and bucco-gingivo-axial angles and extend occlusally to the dento-enamel junction, or roughly speaking, two-thirds of the entire depth of the cavity. Beyond this point we would be depending for support on enamel, a substance unworthy of consideration for anchorage purposes. Fig. 2 represents an occlusal anchorage. Two slight grooves at the linguo-gingivo-axial and bucco-gingivo-axial angles extending very slightly toward the occlusal, then a right-angle step at the occlusal running back into the middle third of the occlusal surface and slightly dovetailed in form. This occlusal step is cut just through the enamel, so that the filling rests on the resilient dentin and is secured by slight grooves in the dentin at point (a).

The preparation of the two cavities, aside from the anchorage, is supposed to be identical. With the lateral anchorage what have we done to the tooth? We have weakened it at a vital point where our fillings are prone to fail. We have cut nearly if not quite through the dentin of the lateral walls, leaving little but friable enamel for support, and at the occlusal third have no anchorage at all. With the occlusal anchorage we have weakened the tooth at no essential point—in fact, have strengthened it by cutting out and filling the fissure, which in a large proportion of cases is a danger point. The filling is anchored entirely in dentin and rests securely on two flat seats of dentin, so that the slightest anchorage suffices. By means of the step anchorage and dovetail it is so secured that

to move it a fracture of an entire lingual or buccal cusp is necessary.

Let us examine the strain the anchorage points are subjected to by using different lines of force. A force exerted at right angles to the occlusal surface at this point forces each filling against the seat, therefore is in no way dangerous. But as we incline the line of force in Fig. 1 the tendency is to push the filling away from the cavity walls, with nothing but the lateral anchorage to hold it in place, so the strength of the lateral walls or of the filling material in the anchorage grooves is a gauge of the amount of stress the filling can withstand. In Fig. 2 the filling is forced more tightly against



the floor of the step of dentin and cannot be moved except by a fracture of the filling at the angle of the step. When the force is exerted at P at right angles neither filling is endangered, but if inclined a few degrees the tendency in both cases is to tip the filling out of the cavity. In Fig. 1 the strain comes directly on the lingual and buccal walls at the point where we have previously weakened them and frequently results in a fracture of one or both. In Fig. 2 the strain comes on the whole pillars of the cusps, the strongest parts of the teeth, for to move the filling in the step it must bear directly against these cusps.

Another comparison which brings into consideration one of the most powerful factors known in mechanics. That is the lever. The law of levers, which you are all familiar with, is: The power is to the weight as the power arm is to the weight arm. This means that the power multiplied by the length of the power arm is equal

to the weight multiplied by the length of weight arm. The fulcrum is the stationary or supported point of the lever. In each of the illustrations a force exerted at point (P) at this angle would tend to tip the filling out of the cavity with the cavo-enamel margin at F as the point of least movement. It would convert the fillings into levers with point F as the fulcrum. The weight to be moved would be the amount of resistance the anchorage points would offer (W). The power arm would be the distance from F to P, which is the same in both cases. The distance from F to the anchorage points would represent the weight arm. In Fig. 1, measuring from F to the highest point of the anchorage possible in the dentin (and this is assuming that all the anchorage strength is at that point), we find the distance in this case to be four inches. In Fig. 2, by describing an arc with F as a center from point P, we find that the weight arm is the same length as the power arm. We will assume that there is an occlusal force of 200 pounds exerted at P along this line of force. In Fig. 1 we have this example: The weight or resistance is the unknown quantity or (X). Fig. 1—(X) times 4= 200×6. 4X=1,200. X=300 pounds. Fig. 2—X times 6=200×6. 6X=1,200. X=200 pounds.

This means that a force of 200 pounds in Fig. 1 would exert a strain on the anchorage grooves of 300 pounds, while in Fig. 2 the same force in the same place on the filling would exert a force of only 200 pounds on the anchorage, or two-thirds as much as in Fig. 1, so that if we grant an equal strength for both methods of anchoring we still find the evidence in favor of the occlusal one. It also shows that in those cases where the dentin which would naturally form the angle of the step is gone we are still justified in placing our anchorage occlusally instead of grooving the lateral walls. The further away from the main cavity we run the step the greater becomes our leverage, so that in cases which show evidences of strong occlusal force we can, by increasing the length of our occlusal step, guard against this force by strengthening our anchorage, while with a lateral anchorage we could do nothing but enlarge the grooves, and would succeed only in still further weakening the lateral walls.

It may be asked at this point whether in actual practice we ever have fillings moved by this occlusal force. For answer take the mouth of any patient who does an average amount of heavy biting, and with a fine exploring point and magnifying glass carefully ex-

amine all proximo-occlusal fillings that are subjected to stress from an occluding tooth. You will find that it is not an unusual occurrence for one mouth to contain several fillings anchored in the lateral walls that have been moved enough to allow of leakage or even the admission of the fine exploring point. If decay has not taken place under such a filling it is only a question of time until it will, provided the patient has not reached a condition of immunity. There are comparatively few occlusally-anchored fillings that come to me for inspection, so perhaps my evidence is of little worth; but I have yet to see a filling so anchored that has failed for lack of support. They may fail for a variety of other reasons, but they do not move away from the cavity walls.

Just a mention of what might be termed collateral advantages for the occlusal step. In all classes of fillings ready access to the cavity for purposes of light, vision and instrumentation is desirable, and it is found that in distal cavities the cutting of an occlusal step is of great assistance. It so opens the cavity to vision and instruments that it is unnecessary to use hooked or sharply curved excavators to remove the decayed dentin; thus it not only expedites and simplifies the operation, but assists us in being thorough. The complete removal of the decayed dentin being one of the essentials of success, a method that simplifies and insures this is advantageous. When the preparation of the cavity is finished we find it a much simpler task to pack the filling material, especially if it be gold, as our instruments easily reach every part of the cavity and we can see what we are doing.—*Review, July*, 1902.

PYORRHEA ALVEOLARIS—PROGRESS REPORT. By Kenneth W. Goadby, London. Read before the Odontological Society of Great Britain, April, 1902. In a preliminary report I stated that the cultural examination had been undertaken in a number of cases, and that the organisms obtained had been subcultured on various media, to determine, if possible, which if any of the organisms present were invariably found in all cases. By these means a number of well-known organisms, mostly belonging to the common saprophytes, were found, among them the B. mesentericus ruber and vulgatus. Many members of the yeast family were also found. A culture of one of these isolated from one case produced death when injected into the peritoneal cavity of a guinea-pig; the yeasts

were recovered from the peritoneal cavity, but were not present in the blood.

I have, moreover, often found yeasts in the small masses of tissue adhering to the apices of teeth extracted in pyorrhea cases, but as yet these have not been inoculated into animals. Culturally, they appear to correspond to the ones found in the so-called chronic abscesses. This fact is perhaps interesting when we recall the number of pathogenic members of the Blastomycetes that have come to light in recent years. Miller, I believe, has described a pathogenic yeast present on one occasion in the mouth, but I have not been able to find its description. Klein has described a yeast isolated from milk, which produced a general tissue change with the formation of new growths in various parts of the body when inoculated into animals; all of these tumors were filled with yeasts in various stages of growth. Grasset has described a pathogenic yeast present in an abscess of the mouth. Troisier and Achlaime have also described a yeast, pathogenic for guinea-pigs, obtained from the membrane upon the throat of a patient suffering from enteric fever. Fullerton has investigated pathogenic Blastomycetes and describes several varieties, among them Saccharomyces tumefaciens albus, which produces tumor formation when injected into animals. The organism described by Grasset appears to be a similar organism to the one I have obtained. It was pathogenic when injected subcutaneously into guinea-pigs. I have frequently met with yeasts of various sorts in the marginal ulceration in children, and in two cases of pyorrhea in women associated with chronic gastritis and extreme attacks of vomiting. The pathogenicity of these species was not tested.

I have noticed that among the débris from the pus of some of the cases in which these yeasts were shown to be present there were some large and irregular threads and bacilli which gave the granulose reaction, and that in some of the cultures of these yeasts there were present threads and elements of mycelial formation which appeared suggestive of the bacillary forms seen in the specimens stained direct. It is impossible to make any definite statement upon this point at present. The direct examination of the pus furnishes some important points, among which may be mentioned the difference seen in the species of bacteria morphologically represented in early and late cases. It is rare to find many cocci present in the later stages, and the field is, as a rule, occupied by bacilli of various kinds

and a good number of threads; among the threads many show a tendency to stain irregularly and in patches, a characteristic that is sometimes met with in the cultivations.

Although cocci are rarely met with in the coverslip direct, they constantly appear if broth cultivations are made from the pus, and among the cocci present the common mouth streptococcus appears with great regularity. Even when the cultivations are made on solid media there is a good deal of difficulty in getting all the organisms seen on the coverslip direct to grow. It does not follow that they cannot be cultivated, but what appears to be the case is that in the mass of organisms are some more or less antagonistic which prevent the growth of each other, probably explaining the curious inconsistence of the species obtained, sometimes the one and sometimes the other organism being able to develop. This, of course, very much complicates the problem, and in addition there are a large number of common saprophytic bacteria of the air that frequently find a lodgment in the mouth. In the cases examined it appears that certain bacteria are generally present and that the others are purely adventitious species, but that of the organisms which are generally present, so far as coverslip indications go, certain ones are very much influenced by the other bacteria developing upon the culture media, so that in some cases they may not grow at all, while in others they are obtained. So far I have been unable to devise a means by which these more exotic bacteria can be always isolated, although I have obtained some of them in pure culture at various times.

By a long process of exclusion certain species have been, I think, excluded from causal relation to pyorrhea, others appear to be related. One organism, a coccus not hitherto described, may perhaps be mentioned, as it is often present in the pus of dento-alveolar abscesses, where it occurs with tolerable frequency, and appears to have some relation to the curious thick viscid pus one finds in some pyorrhea cases. This coccus is also found in the pulps of dead teeth associated with abscesses, and especially in acute oral suppuration. It produces a marked stringy viscous growth upon solid media and is extremely difficult to remove from the agar slant. The broth cultures also form stringy viscous growths which at times adhere to the sides of the tube in the form of a cloud of colonies, about 0.5 millimeter in diameter, that are strongly attached to the glass; particularly does this occur in media containing nitrate. This organism will be referred to at a later date.

I have already mentioned the difficulty that there is in obtaining cultivations of all the bacteria that are to be seen on the coverslip preparations, and it was therefore thought that some additional light on the bacteria of pyorrhea might be obtained by the direct inoculation of animals with the pus obtained from the pockets. There was considerable difficulty in obtaining sufficient material from a given case to perform the experiment. Eventually the following method was adopted: After previously wiping the gums with a piece of sterile wool moistened with sterile water, the pockets were cleared out with a sterile instrument and the material obtained mixed up in sterile broth in the form of an emulsion. The emulsion was inoculated into guinea-pigs and in four instances into rabbits. The inoculations were both intraperitoneal and subcutaneous. The result has given some additional light on the bacteria of pyorrhea and incidentally on the question of oral sepsis.

Twenty-three animals were inoculated, of these nineteen died, some within eighteen hours; the remaining four recovered, but of these two showed local abscess at the site of inoculation, with fluctuation, which cleared up. Several of the animals which succumbed also showed a local abscess which did not burst through the skin, but was gradually absorbed. One guinea-pig showed a local necrosis of the skin. At three of the post-mortem examinations no organisms at all were obtained from the tissues. In one of the cases the local abscess was incised before death, and the contents showed microscopically the organisms that had been noted on the coverslip; there was a good development on broth and a considerable amount of smell evolved. Plate cultures gave only the mouth streptococcus. In no case were staphylococcus aureus and staphylococcus albus present in the blood or in the tissues and kidney; there was no interstitial abscess formation such as noted by Galippe. The staphylococcus noted above was obtained once from a local abscess at the seat of inoculation, and in one case a streptococcus was obtained from the heart blood. In four cases a streptobacillus tending to form rather long threads of unjointed bacilli was isolated.

The organism in each case seemed to be identical, cultivated on various media it conformed to a general type. The pure cultivations were injected subcutaneously in three guinea-pigs with a positive result. From none of the animals inoculated was the pneumococcus obtained from the heart blood, and no capsuled cocci were observed in the blood. This last is perhaps of interest, as the pneumococcus is

frequently present in the saliva, as has been pointed out by Washbourn and Eyre. Kirk has also described a coccus which he thought resembled the pneumococcus as occurring in the abscesses attached to living teeth, and suggested that the infection had arisen from the organisms gaining access through the mucous glands. He, however, does not consider his evidence conclusive. Bacillus coli was not obtained from any of the post-mortem examinations on the animals inoculated.

These results are too fragmentary to allow a deduction to be made at present, and serve only to illustrate the complicated nature of the problem; at the same time they in no way tend to show that pyorrhea is a condition generally referable to infection with the common pus cocci. I must say that at first I was inclined to look on the matter rather from this point of view, but the results of my experiments tend to negative that assumption. It may be that the mouth streptococci were in some way accountable for the animals' deaths, as it is well known that the injection of certain organisms tends to promote the pathological effects of other organisms with which they are injected. Thus, for instance, the virulence of attenuated diphtheria bacilli may be increased if injected into an animal together with the streptococcus pyogenes, an attenuated streptococcus pyogenes by injection with the bacillus coli, an attenuated bacillus of malignant edema by injection with a culture of bacillus prodigiosus, and so on with very many other bacteria. What may have happened, therefore, is that the cocci which often appear on the culture media and do not appear in the post-mortem examinations have so far assisted the pathogenic effect of the other organisms that what would be a non-fatal dose has proved to be a lethal quantity. The cocci to which I refer are the streptococci of the mouth, which appear in almost every culture, and which have been obtained from the site of inoculation in certain cases. That some such interaction and symbiosis does take place is probable, but at the same time I think that there is another explanation to be offered of the pathogenic effect of pus.

In several of the inoculations performed there was no fatal issue, although the cases in no way differed from the ones that gave the positive result, and in several of the inoculations the animal did not die for a considerable time; moreover, in four of the fatal cases no organisms whatever were found in the blood or in the tissues; there was no abscess formation; at the site of inoculation there was at first a slight local reaction, which entirely cleared up before the

animal's death. Examination of the kidney showed no abscesses, and one animal which did not die was killed, and the kidneys examined and found to be entirely normal, and to show no evidence of the abscess formation which is generally associated with the injection of pus-cocci (staphylococci). It therefore occurred to me that the organisms concerned in the process might be of the toxine-forming species, and the following experiment goes some way to show that such a probability is possible. A broth culture from a pyorrhea case in which gastric trouble had been in evidence for some time was filtered after seven days' incubation at 37.5° C. The filtrate was inoculated into a guinea-pig weighing six hundred and twenty grams, the amount injected being 4.5 cubic centimeters,—that is, less than one cubic centimeter per one hundred grams body weight of guinea-pig. The animal died in forty-eight hours. Cultivations made at the post-mortem examination from the blood and organs gave negative results. There was a gelatinous exudation at the site of inoculation, and the suprarenal capsules were decidedly hemorrhagic. The rest of the organs were normal. Another filtered culture gave a similar result.

Unfortunately, two experiments are not enough to more than point to a probable existence of toxine, but it is at the same time a point of not a little interest, and the following case strongly confirms the supposition of toxine formation by mouth bacteria. The patient consulted his medical adviser, complaining of weakness and deep-seated pain in the muscles of his legs and thighs. He had difficulty in walking, but no lightning pains or definite ataxia. He could not sleep, and suffered from severe mental depression. He complained of no gastric symptoms beyond a distaste for food, although his mouth was in an extremely septic condition. He had increased knee-jerks and patches of hyperesthesia on the feet. The thigh muscles were tender on deep pressure, but there was no pain along the nerve-trunks. There were no thermal changes and no trophic disturbance. There were no eye changes. There was considerable loss of power to grasp and loss of power in the lower extremities. He was treated for neurasthenia and told to have his mouth attended to, but for some little time refused. Eventually, as he was becoming no bettter, he consulted me. There was excessive pyorrhea with much pus and considerable destruction of the alveolus. The other symptoms were well marked. The affected teeth were removed and mouth lotions prescribed. Improvement immediately set it, the loss

of power slowly returning, and within six weeks he was practically well, having lost the chief nerve symptoms, although his grasp was still weak.

In attempting a summary of my investigations the large number of conflicting facts makes the task by no means a light one, and the conclusions may be said to be largely negative, but at the same time perhaps there is some additional light on oral sepsis. It appears highly improbable that the ordinary pus organisms, such as the staphylococci, bacillus pyocyaneus, bacillus coli, etc., have any direct share in the production of pyorrhea alveolaris. The absence of the pneumococcus in any of the inoculated animals is also of some interest. The occurrence of members of the blastomycetes, in both the pus and in the tissues surrounding the roots of pyorrhea teeth, is instructive and certainly merits further investigation.

Although it is impossible in the present stage of the research to make a definite statement, there appears little doubt that the organisms, whatever they may be, concerned in the process are pathogenic for animals when injected from the gum margin, and that the progress of the disease would appear to be more nearly related to a toxic condition than to the ordinary condition of suppuration. The relation of pyorrhea to general toxic conditions and septic gastritis, as pointed out by Hunter, certainly receives confirmation, and the fact of the inoculation of the filtered broth cultivations producing pathogenic effects points to the presence of toxines that may have much importance in disease.

CHEMICAL INFLUENCE OF SALIVA ON CEMENT. By J. E. Hinkins, D.D.S., Chicago. Read before the New York Odontological Society, Jan. 21, 1902. In my paper on "The Disintegration of Cement Fillings" I discussed the two distinct actions on cement—viz., the mechanical attrition and the dissolution under the free margin of the gum—taking account of the various cements as they have been promulgated by their inventors from 1870 to the present day. The purpose was, first, to determine the composition of cements; second, to determine the amount of acid or alkali formed by common bacteria of the mouth; third and last, to see whether those acids or alkalies would dissolve or injure cement. The question now arises, What chemicals are contained in saliva that will influence the cement? We will therefore review the literature of the various analyses and constituent elements of saliva.

Saliva is secreted by several glands situated in the mouth, and represents in its mixed condition a viscid, generally slightly alkaline, tasteless, inodorous liquid of a specific gravity of 1.002 to 1.008. It contains: Water, 99.49 per cent; ptyalin, 0.12 per cent; epithelium and mucin, 0.13 per cent; fatty matters, 0.11 per cent; salts, 0.15 per cent.

Ptyalin, the active principle of saliva, is a ferment which has the power of converting starch into maltose and small quantities of dextrose. Intermediary between the starch and sugar are two products known as erythrodextrin and achroödextrin. Starch is recognized by a deep blue color produced by a solution of iodin and potassium iodid in water. Erythrodextrin gives a mahogany brown or violet color, and achroödextrin, maltose, or dextrose does not color the iodid solution at all. The composition of ptyalin is doubtful. Among the various salts of saliva is found potassium sulfocyanate, as may be shown by the addition of a drop of ferric chlorid solution, which produces a deep red color, disappearing on the addition of mercuric chlorid (difference from meconic acid).

The quantity secreted daily by a man varies considerably; estimates varying between thirteen ounces and three and a half pounds have been given; 500 to 800 grams is another estimate. Its alkalinity averages in man 0.08 per cent, expressed as sodium carbonate.

The constituents of saliva are: *Organic:* (a) Mucin. Acetic acid precipitates this in a stringy form. (b) Ptyalin, an amylolytic ferment discovered by Leuchs in 1831. (3) Proteid; a trace of a proteid, coagulable by heat and of the nature of a globulin, is constantly present. (d) Sulfocyanid of potassium (KSCN) is usually but not always present in human saliva. *Inorganic:* Small quantities of chlorin and phosphoric acid in combination with potassium, sodium, calcium and magnesium; also small quantities of sodium carbonate. Sodium chlorid is the most abundant salt. Schönbein observed that saliva contains a substance which, like nitrous acid, colors blue a mixture of starch and potassium iodid.

According to Hammarsten, the cells of the submaxillary gland contain proteids, of which the most abundant is a nucleo-albumin; they also contain mucin, which passes into the saliva. The sublingual is similar. The parotid cells contain no mucin. A small amount of mucin is, however, obtainable from the investing connective tissue. In myxedema the parotid cells, however, undergo mucoid degeneration. An extract of salivary glands exerts a similar diastatic power to that of saliva, as it contains ptyalin.

Hammersbacher found, in 1,000 parts of the ash from human saliva, potash 457.2, soda 95.9, iron oxid 50.11, magnesia 1.55, sulfuric anhydrid (SO_3) 63.8, phosphoric anhydrid (P_2O_5) 188.48, and chlorin 183.52.

According to Erik Müller, who made extensive investigation of the salivary glands, saliva is formed from typical intracellular granules. He gives the following results of his investigation: 1. The saliva is a product of granules which undergo characteristic transformations. 2. The secretion is present in the gland-cells in the form of small round vacuoles, which are separated from the surrounding protoplasm by a wall which can be stained. These vacuoles were first demonstrated by Retzius in Golgi preparations and by the author in ordinary preparations. 3. These vacuoles are formed in granules in cells. 4. The cells have a different appearance, depending upon their richness in granules; some of them have large, clear granules, separated from one another by a reticulum containing small granules that take the stain; other cells have large granules that can be stained. 5. During very active secretion the granules which can be stained become changed into secretory vacuoles. 6. The secretory capillaries of albuminous glands are all intracellular.

Chittenden and Richards, in a study on variations in the amylolytic power and chemical composition of human mixed saliva, give the following summary of some of their results: "Human mixed saliva contains normally no sodium carbonate whatever; the alkalinity indicated by litmus, lacmoid, etc., is due to hydrogen alkali phosphate, with possibly some alkali bicarbonate. Mixed saliva invariably reacts acid to phenol-phthalein. The alkalinity of mixed saliva as indicated by lacmoid is greater before breakfast than after the morning meal, a conclusion which stands in direct opposition to the statement frequently made that the alkalinity (of mixed saliva) is least when fasting, as in the morning before breakfast, and reaches its maximum with the height of secretion during or immediately after eating. Saliva secreted after a period of glandular inactivity, as before breakfast, manifests greater amylolytic power than the secretion obtained after eating, as observed by Hofbauer. Corresponding with this increase in amylolytic power occurs an increase in the proportion of alkaline-reacting salts, but the increased amylolysis is due primarily to an increase in the amount of active enzyme contained in the saliva. Mixed saliva, whether collected by mechanical stimulation or collected without effort, shows

a natural tendency to vary both in composition and in amylolytic power throughout the twenty-four hours, and apparently independent of the taking of food. Between 7.00 and 11.00 a. m., however, in the absence of food the secretion is remarkably constant. Mechanical stimulation, as chewing a tasteless substance, and alcohol, ether, gin, whisky, etc., taken into the mouth, all lead to the outpouring of a secretion richer in alkaline-reacting salts and in amylolytic power than the secretion coming without stimulation. Mixed saliva resulting from stimulation with ether, alcohol, etc., contains a much larger proportion of mucin than the secretion coming without stimulation, being noticeably thick and viscid. This quality is not apparent in the saliva resulting from mechanical stimulation."

Greenbaum investigated the effect of resistance to secretion upon the percentage of salts in saliva, and upon the work done by the gland, and concludes as follows: "In normal circumstances the percentage of salts in saliva varies with the rate of secretion, increasing as the rate increases and decreasing as the rate decreases." In his experiments he found that when a decrease in the rate of secretion is effected by offering resistance to the flow of saliva, the percentage of salts in the saliva never decreases proportionately and may actually increase. He states that the increase of percentage of salts cannot be attributed to a filtration through the walls of the ductules and ducts, since this process, even if it could affect the percentage of salts at all, would necessarily cause a greater increase in the percentage of organic substance. His experiments show that there is no necessary connection between the increase in the percentage of salts and the increase in the percentage of organic substance.

An experiment was made to determine approximately to what extent the viscosity varies with the percentage of organic solids. A number of specimens of saliva were collected and forced through a capillary tube under a pressure of 10 cm. Hg. Time and quantity were observed and comparison made with distilled water, the viscosity of which was taken as unity. The result was that the viscosity varied with the percentage of salt.

M. Cohen made investigation of the saliva, and reported the following results: He found many indicators useless in measuring the alkalinity because of the large amount of CO_2 in the saliva. Methyl-orange proved to be the most satisfactory, and this gave reliable results. The average alkalinity of the saliva corresponded

to a solution of sodium hydrate of a strength of 0.0154 per cent, although it varied considerably. Cohen is of the opinion that the figures given by earlier authors for the alkalinity have been too high. He found the alkalinity greatest in the morning when the stomach was empty; it decreased in the forenoon, increased again at noon and reached its highest point at this stage. It decreased again in the afternoon and increased toward the time of the evening meal. He never found the reaction acid in normal persons. He calls attention to the fact that the saliva has frequently been found acid in infants and in adults who are the subjects of diabetes or of diseases of the mouth, esophagus or stomach. He observed no relation between the acidity of the stomach contents and the alkalinity of the saliva. He observed some instances of paralytic sialorrhea, also the saliva of patients who had received pilocarpin, and found an unusually high degree of alkalinity; the freezing-point of the saliva in these cases was somewhat more reduced than in normal cases.

Many experimenters have tried to cause absorption of blood exudates or of metabolism products in cases such as pleural effusion and in nephritis. Cohen likewise attempted it, but without definite results. He was unable to observe any marked change in the alkalinity or in the molecular concentration, though the amount of chlorids seemed to be increased. In two instances of chronic parenchymatous nephritis, however, he found the molecular concentration high, as indicated by the lowering of the freezing-point.

F. Kübel brings forth evidence which tends to upset the current doctrine that ptyalin acts best in a neutral or weakly alkaline medium. On the contrary, he finds that even the weakest alkaline reaction hinders it, while a weak acid reaction is highly favorable, especially when the acidity is due to some of the stronger acids, such as HCl. An amount of HCl equal to that in the gastric juice brings the activity of the ptyalin to an end.

According to Krüger, the thiocyanic acid is a constant and normal constituent of human saliva; it does not result from a partial decomposition of the saliva or from carious teeth. The saliva of smokers was found to contain two or three times as much of the acid as that of non-smokers. The quantity of saliva secreted in twenty-four hours (250 to 300 c. c.) was not markedly influenced by cigaret-smoking.

There is no doubt that there are some ingredients contained in saliva that may have influence on the general economy of the human system; if not from the acidity or alkalinity, it may be from a

toxicity; as, for example, the experiments of Pignatti, Morano and Baccarani, who tested the toxicity of saliva from healthy and diseased human beings on rabbits. They found that the saliva was toxic in doses of 20.738 c. c. per kilo of animal. The toxicity varied with individuals within wide limits and seemed to have very little relation to health or disease. There was also no relation to be found between the toxicity and the specific gravity, the degree of alkalinity, or the quantity of ptyalin or mucin. The animals generally died in convulsions.

Again, other authors claim on the contrary, that there is nothing in the ingredients of saliva that would be deleterious to the general health or to the oral organs. Sanarelli, for instance, states that, considering the frequent presence of pathogenic microorganisms in the mouth, it is remarkable that primary lesions appear so rarely, and that wounds heal so kindly there; and sums up by saying that the saliva is an unfavorable medium for certain pathogenic bacteria, destroying them, when they are not too abundant, more or less rapidly, and so altering the type of others—for example, the pneumo-bacillus—as to render them harmless.

Hugenschmidt made investigation of the antiseptic properties of saliva in order to determine why mouth operations are seldom followed by infection. He found that ordinary microorganisms grow rapidly in the saliva, but that, nevertheless, this fluid does have a tendency to keep down infection. Being alkaline, it thus prevents fermentation. It washes away considerable portions of food which tend to lodge on the mucous membrane and dilutes that which remains. Hugenschmidt maintains that saliva stimulates the diapedesis of the white blood-corpuscles in the lymphatics. Even normal saliva contains microbic products, and therefore, because of its attractive power toward microbes, favors phagocytic action, the phagocytosis being due to rapid migration of the leucocytes.

We have heretofore fairly well reviewed the pathological physiology and the chemical action of saliva upon the economy of the human system, including the maxillary glands; but, now, what effect can the ingredients of the secretive oral organs have on cement?—or, in other words, what chemical changes take place when the ingredients of saliva are combined or connected with the ingredients of cement? I will therefore review the contents or the chemicals contained in cement. The principal chemical constituents of cement I find are phosphoric acid, phosphate of alumina, nitric acid, phosphorus, sodium phosphate, zinc oxid, silicate of alumina, mag-

nesium oxid, basic zinc oxid, zinc oxychlorid, zinc phosphate and zinc sulfate, arsenic, antimony, lithium phosphate, borax, boric acid, calcium pyrophosphate, cadmium sulfid, fluorhydric acid, sodium carbonate, powdered glass, silex, sodium borate and magnesium nitrate. I must confess that I am unable to see that there is anything in the combination of the constituent elements of saliva and cements that would be derogatory to each other, if no other element comes in contact with them. But there is an element that comes in contact with them that is a phenomenon to me and which I am unable to explain; that is, I observed that chemical changes take place during the various periods of female life. I find that the saliva of young girls, before they mature, is of lower specific gravity and varies from that in those who are menstruant; and that the saliva in women who have passed menstrual life returns to the same nature as that found in young girls. From this it is evident that the organs of generation influence the circulatory organs, hence the saliva. Another observation which I have made, and which undoubtedly is not new, is the chemical changes that take place in the saliva while operating on the teeth. We find that the saliva changes its chemical constituents while the mouth is open. This possibly may be due to the atmospheric elements of the room or to exorbitant inhalation of carbonic acid gas.

Now to the point: If such morbid changes take place in the chemical constituents of the saliva, from whatever cause it may be, why cannot the same influence produce chemical changes in cement? Therefore it is my opinion that if any derogatory chemical influence takes place in cement, it is produced by the same action and the same cause as in saliva.—*Cosmos, June,* 1902.

SENSITIVENESS OF DENTIN AND ITS TREATMENT. By Professor Dr. Walkhoff, Munich. *Deutsche Monatsschrift für Zahnheilkunde.* Translated for *International* by Dr. W. H. Potter. In discussing the cause of the sensitiveness of dentin the author declares emphatically against the presence of nerve-fibers in the tubuli of the dentin. He spends considerable space in refuting the views of Morgenstern, who claims to have found nerve-branches in the contents of the tubuli. He agrees with Gysi in that the latter denies the presence of nerve-branches in the tubuli, but disagrees with him in his explanation of the way in which dentin becomes sensitive, Gysi's view being that the contents of the tubuli being semifluid, a pressure

or pull upon the contents of the tubuli was immediately transmitted to the odontoblastic cells, and they in turn acted upon the nerve-fibers which surrounded the cells. Gysi's theory can be called the hydrostatic theory, and does not grant the contents of the tubuli any further share in the establishment of sensitiveness in dentin except as the contents of the tubuli act as confined columns of water and transmit impressions to the odontoblastic cells. The author's views upon this subject can best be understood by the translation of a few sentences. "My view is that we must consider the odontoblastic cell and its projection into the dentinal tubule as physiologically one. . . The projections into the dentinal tubules are an integral part of those cells which by projections are related to other cells of the pulp. These cells are surrounded by numerous actual nerve-fibers, which in some cases enter between the odontoblasts. The zeal with which the presence of nerve-fibers in dentin is sought for by many observers is due to the old idea that the condition called irritability is limited to the nerves of an organism. Physiology long ago overthrew such a view. Irritability, as Verworn has said, is a common peculiarity possessed by all living substance. The tissues of animals which possess no nervous system, and all plant tissue, and even all isolated one-celled organisms react in an outspoken and clear way to all irritation which is brought to bear upon them."

From these considerations the author argues that the contents of the dentinal tubules are capable of receiving an impulse or an irritation and transmitting it to the odontoblastic cells of which they are merely projections, and that the odontoblastic cells are capable of sending on the impulse to the nerve-fibers which immediately surround the cells. And all this is accomplished not by the presence of nerve-fibers in the tubuli, but by the power which all protoplasm has of reacting to an outside stimulus.

The author next considers the clinical diagnosis between normal and hypersensitive dentin. His method is to force by means of a syringe ten or twelve drops of water of a given temperature into a cavity and note the reaction of the dentin. According to his experiments normal dentin reacts at a temperature of 15° to 18° C. That is, a distinct sensation is experienced when water of this temperature is introduced into a cavity. The dentin which reacts at a temperature of 18° to 23° C. is hypersensitive. In this way we have a sure objective means of distinguishing between a purely local affec-

tion of the odontoblasts and their projections into the dentinal tubules, and affections of the pulp, especially the acute form of inflammation. An acute inflammation of the pulp reacts powerfully and continuously at a temperature of 23° to 28° C. A pure hyperesthesia or a normal dentin does not commonly react at this temperature. As to the practical handling of sensitive dentin, it can be accomplished either by a total anesthesia of the tooth, or by a local anesthesia of the ends of the fibrils. The general anesthesia is best accomplished by the application of cold produced by chlorid of ethyl. Care should be taken not to apply the cold where there is an inflamed pulp, as great pain will be produced. But it can be applied very successfully in cases of sensitive dentin and in slight grades of hyperesthesia which react up to 22° C., as described above. If used in cavities which react to a temperature above 22° C., it is a great mistake.

Where cold cannot be used, resort must be had to other means affecting a more local area. Of these the author mentions cocain and chinose. The latter drug acts by favoring the diffusion of the cocain. A stream of warm carbonic acid gas is also recommended. This is said to lower the vitality of tissues with which it comes in contact and to make them less capable of transmitting irritations. The author's latest method is to produce carbonic acid gas in the cavity in a nascent condition, and use in combination some alkaloid, preferably cocainum nitricum.

WASTE ENERGY OF COUGHING.—The amount of energy expended in coughing is very considerable; indeed, one of the patient statisticians for which Germany is renowned has calculated that a patient who coughs once every quarter of an hour for ten hours expends energy equivalent to 250 units of heat, which may be translated as equivalent to the nourishment contained in three eggs or two glasses of milk. In normal respiration the air is expelled from the chest at the rate of four feet per second, whereas in violent coughing it may attain a velocity of 300 feet. This waste of energy is especially important, because it occurs, for the most part, in persons whose assimilative functions are already working under difficulties; consequently the ingestion of the corresponding quantity of nourishment by no means compensates for the exertion. It follows that persistent cough is *per se* a manifest cause of emaciation, though there are many other factors which tend in the same direction; hence the desirability of restraining cough within safe limits, especially when it is due to irritative reflexes, such as are excited by larnygitis and pharyngitis. Increased rapidity of expulsion of air without increased exertion is obtained in high altitudes by reason of the low barometric pressure and the consequent diminution of resistance to the exit of the respired air; a fact which explains in part the beneficial influence of high altitudes in diseases associated with cough.—*Medical Press and Circular.*

Letters.

THE BOSS HAS ANOTHER DREAM.

(AS TOLD BY THE OFFICE BOY.)

Me an' the Boss was stringin' up the Clothes Line in the back yard one mornin' an' says he, "James, I had the funniest Dream, las' night; I dreamt I'd Reformed."

The Boss he hid his face behind his hand, kind o' Bashful, an' he give a Little Snigger, like he hoped I'd understand he wasn't claimin' it was reely true, but only a Dream. So I Smiled, an' then he looked Irritated, like he thought I was pokin' Fun at him. But I wasn't, reely. The thing that made me smile was bein' reminded of a Dream I'd had myself. I dreamt he'd paid me Four Dolers on account, an' later on he complained that he couldn't reely Spare the Money, so I had to Pay it all Back.

"Yes, James, I did sure 'nough reform. What brung it about I reckon was this; fer three nights runnin' I've dreamt about Dock Measley, an' how he'd talk to Patients, an' handle them. But las' night, after awhile it seemed like it wasn't Dock Measley at all, but myself. I'd always have the right answer ready fer people, an' I wouldn't git flustered, come what might. Let me give you an instance, an' then you kin jedge fer yourself. I thought a Lady she come in the Offis, an says she, 'Doctor Contour, the bill you sent fer my Dater's work is Exorbitant, simply Exorbitant. My husband was Stunned when he saw it'—an' so on, James; you know how they talk."

"Yessir, I kin finish it myself. Says she, 'They mus' be a Mistake, Doctor. You never filled only four teeth, an' you've charged seven Fillings in the Bill. An' anyhow, her teeth hurt, an' you ain't done the work Good, an' I've come to tell you my husband ain't a-goin' to pay you—not right away, anyhow, ner unless you Throw Off some.'" The Boss he looked kind of amazed to hear me run it off so Slick, an' says he, "You're a Corker on Mimickin', James. Blamed ef I don't Haf Think you'd orter go with a Show. You're too Talented fer a Dentist."

That sort o' encouraged me, so to please him I went on actin' out how the Woman she set a-blinkin' her Eyes, an' a-tappin' with her foot, an' talkin' him down when he tried to put in a Word. The Boss he got to Laughin' so he got all Tangled Up in the Clothes

Line, an' his mouth was so wide open that a Big Fly went Straight Into his Wind-Pipe, an' mighty nigh choked him to death. So after I'd pounded him awhile an' he'd managed to Swaller the Fly the right way, I kind o' let the woman Taper Off an' Run Down, till she come to a standstill. Then I showed how he answered her. Says I (imitatin' the Boss talkin'), "I'm Offul Sorry they's been any misunderstandin', Mis' Browbeater, an' ef you insist the bill is too big, why I reckon it reely is, an' I'll haf to Throw Off somethin'. I don't want none o' my patients to feel dissatisfied, ner do I"—

"Stop, stop, James, "the Boss busted in, "you done the woman part first class, but you—you—why, you cock-eyed little pollywog you, how dare you redicule me? Right to my face, too! You know well enough I never give in to my patients that away!" I seen I'd went a little too far, an' I'd got to find a excuse, tollable quick. So says I, "What I'm a-tellin' is reely part of a Dream I had myself, somethin' a good deal like your Dream, only it wasn't the same woman, I reckon. I ain't responsible fer dreamin' things, no more'n you are, am I?" says I. So I looked Turrible Injured, an' I guess he allowed he'd better reverse his decision, else I'd call my nine off the field, an' the game would end right there.

Says he, "They ain't no great amount o' Harm done thus far James. Only the nex' time you find yourself a-dreamin' about me givin' in to patients that away, you see to it that you wake yourself Right Up. Sech dreams is Slanderous, an' you hadn't orter have 'em. Now then, you listen to me: I'll set you straight an' then you kin Go On. What I reely replied to that woman—in my Dream —was this. Says I, "Madam, I have only this to say in reply to your objections to my bill—you directed me to do whatever was required for the young lady; you know that she came several times, and you asked no questions as to the probable expense. It is rather late to ask me to discuss the matter of my charges. The bill is just and reasonable, and I cannot change it. If you require time to pay it, we may talk about an arrangement to that effect, possibly, but I cannot consent to any reduction whatever." The Boss he folded his arms an' looked Offul Severe at me, like I was the woman, an' I'd better Watch Out how I tackled a man like him. I was reely clean Took Aback, fer I'd never heered him say nothin' like that to patients. It sounded like it might of been Dock Measley a-talkin'. As I was a-thinkin' that, in come Dock Measley through the back gate.

"What sort o' Racket is this you're a-givin' us?" said he. The Boss he looked kind o' Confused. "Why James is givin' me a little exhibition of his mimickin' powers," says he, an' I could see he suspicioned Dock Measley had heered a good deal that had been said. "James, go on an' show the Doctor the way *he* talks," said the Boss oneasily. I seen by his sayin' this that he meant I was to change the subject an' not make no further reference to him. But I was a-thinkin' jis' at the moment about them Four Dolers he took back from me, an' although it wasn't only in a Dream he done it, it seemed like the Old Nick possessed me to kind o' try an' even things up with him. Dock Measley's bein' there give me Courage, so pertendin' I didn't heer what he said about mimickin' Dock Measley, I went right on tellin' some more about what happened betwixt him an' the woman. Says I, "So then the woman she growed Reel Sassy, an' she jawed right back at you, an' said she'd been told some o' the younger dentists was reely better than you was, an' they'd had advantages you'd never had when you was a student, an' their instruments was more modern, an' they had improved methods, an'—"

"What's all this, James!" the Boss interrupted, blushin' Red Hot. He edged round behind Dock Measley an' stood shakin' his Fist at me. "W'y it's the way I reckon that woman answered you in your Dream," says I. "After you'd told her you always tried to keep your prices as low as the lowest, an' you hoped she wouldn't think you meant to take any Advantage o' her, an' git mad an' go somewhere else to git her work done." The Boss looked Dumfoundered. "Why, James, that wasn't what I dreamed at all; I never told you I dreamt anythin' in the leas' resemblin' what you've jis' said, that about my tellin' her I always tried to keep my prices so low, an' hopin' she wouldn't leave me, an' so on. What ails you, all of a sudden!"

I looked as Dum'-Headed as possible, like I couldn't believe my Ears, hearin' him deny what I said he'd said. He was beginnin' to git Bilin' Mad now, seein' how I was makin' him Redick'lus in Dock Measley's eyes. The wus he stared at me the wuss Rattled I let on to be, like he'd told me on the Sly how to act, heerin' Dock Measley a-comin', an' I'd fergot, an' got all Muxed Up through his tryin' to set me Straight. Dock Measley he was Listenin' Clost, like he didn't want to miss a word. So after

blinkin' a minute, like I couldn't hardly Ketch on again, through the Boss's interferin' so, I went on—"Then the Lady she said your apologies an' explanations was all N. G., an' wouldn't Go Down, an' you'd simply lost a desirable family, an' no help fer it. She said your patients, lots o' them, had often said they'd noticed you wasn't doin' the kind o' Work you ust to"—

Here the Boss he flew in a sudden Frenzy, like a Bee had got up his Pants Leg, an' before I could get out of the Way he landed a Slap on my Ear that sent me down fer the Count. I was up agin right away, an' expectin' to Ketch one on the Jaw that would end the Fight, fer I seen I was overmatched. But the strangest thing happened jis' then—the Boss he Fell Down like Fitz had countered on him, an' was a-wallerin' in the grass like it was a attack o' Upperlipsy, screamin' an' Frothin'. Dock Measley he out with his Lead Pencil an' jammed it betwixt the Boss's teeth, so's he wouldn't bite his Tongue, an' the Cedar Chips flew like a Corn-Shuckin' Machine. "Set on his head!" Dock Measley yelled. So I done it, an' us two managed to hold him Down, Dock Measley a-settin' on his Haunch at the same time, like he was a Hoss that had fell down an' busted a Shaft, an' was a-tryin' his best to Rare Up an' knock over a Sky-Scraper. Every other Second er so the Boss would give a Herculaneum Heave, a-tryin' to sling Dock Measley an' me off. But we stuck to him, an' I stuffed some Grass in his mouth, an' stuck him with a Pin, to let him understand me an' Dock Measley was bossin' this Job, an' it wasn't no time fer Foolishin'. Before long he showed signs o' Givin' In. Says he, "James, you Souse-Headed Son of Belial, lemme up. Lemme up, I tell you!"

Before I could say whether I would er I wouldn't, Dock Measley Spoke Up. Says he, "I've got somethin' to say about this. Before you Git Up you're a-goin' to promise a few things. This dreamin' is all very fine, but what you need is a little more actin'. You've been doin' a stack o' Missionary Work fer years, in a field where it wasn't called for, an' wasn't in the least appreciated. You've been doin' good dentistry, conscientious, reliable work, at second-rate Cobblers' terms, an' throwin' in Apologies, an' all because you haven't had the Spunk to claim Perfessional Fees. It ain't so mutch because you're reely philanthropic that you've done this, but because you haven't cultivated Backbone. An' because you *have* been doin' reely good work, competin' in Prices with the lowest

down, mos' Ornery an' mos' Conscienceless quacks in the trade o' dental practice, your offense agin the Perfession is only a trifle less heinous than your offense agin your own Family. Now, then, do you apologize fer the great wrong you've done your Perfessional Brothers, an' their wives, children, an' other dependents, by your thoughtless prostitution of your talents?"

"I do," said the Boss in a Faint Vois, like he was Gittin' Married.

"An' you promise to give out, so everybody will know, that you've raised your prices?"

The Boss kind o' Balked at that, but Dock Measley motioned to me, an' I prodded him with the Pin, till he Yelled an' promised.

"You promise furthermore to stop an' consider, the nex' time a Young Lady chewin' Gum comes sailin' in, an' she tells you in advance she don't want to pay mutch, an' she's got on a new Chiny Silk dress, an a Seven Doler sun-shade—you'll stop an' consider, I say, that this same young lady is probably on her way to the Milliner's, even then, an' she'll pay Eighteen Dolers fer a Hat, an' never Wink?"

"Ye-es," said the Boss, not seemin' to Understand.

"An' she'll buy four hats a Year, at them rates, an' yet expect you to put in Five Hours workin' at Two Gold Fillin's, an' charge her Four Dolers?"

"Ye-es."

"Prod him agin, James," muttered Dock Measley. So I done it. an' when he'd done Yellin' Dock Measley said, "That's fer not seemin' to Appreciate what a Sinner agin the Perfession you've been. Now another thing—you promise when you start in to say your little 'Now-I-lay-me' at bedtime, that you'll ast to be helped to remember to recollect not to ferget that you're a member of a Reel Perfession, an' entitled to ast perfessional fees, an' not keep a-thinkin' all the time, oh, what ef I should lose this Patient? My, my, what ef I should!"

The Boss promised, but he didn't seem to be Offul Mutch impressed. So then Dock Measley he added a few more Pious Reflections, calculated to Clinch the work of Reform, an' let him up. The first thing the Boss done was to land a Kick on me that like to of Drove the Patch of my Trousers into the top of my Hat. An' he never offered to Tech Dock Measley.

Cincinnati, O. FRANK W. SAGE, D. D. S.

PAPAIN—REPLY TO DR. LATHAM.

Chicago, October 4, 1902.

To the Editor of the DENTAL DIGEST.

DEAR SIR:—In the July number of the DIGEST Dr. Vida A. Latham intimates that I have claimed something about the use of papain to which I am not entitled. In reply I will give a quotation from my paper read in Paris, 1900 (see page 160, Vol. I, Transactions of the Third International Dental Congress): "In times past the digestion of animal tissue has been accelerated by the use of pepsin or some of its preparations, and of starchy matter by taka-diastase. In the year 1881 Van Antwerp of Kentucky discovered that the fresh leaves of the paw-paw or *Carica papaya* would digest fresh meat, beefsteak and other animal flesh." I think the insinuation that I claimed credit for something to which I was not entitled falls flat in view of the above.

For the benefit of your readers who do not know about papain, I will say that it was isolated in the year 1879 by Peckboldt under the name "papayatin," and by Wurtz and Bouchut, 1879, who called it "papain." This was not generally known for some time, and Van Antwerp's discovery was made independent of the above. So far as I know, I was the first to use papain for digesting pulps, as Oakley Coles had used only pepsin, and he discarded it between 1870 and 1880. I am the author of the formula of hydrochloric acid, Price's glycerin, and papain, for the purpose of pulp digestion, and the remarks of Dr. Latham simply show that she does not read very carefully the *Dental Cosmos,* the *Dental Review* or the DENTAL DIGEST, all of which journals published my paper. If she will only try the papain paste on the next case of dead pulp, where it is difficult to remove it from the twisted roots of a tooth, she will be glad there is such a drug as papain, and she will be willing to credit me with its first proper scientific introduction to the profession for dental purposes.

Respectfully yours,

A. W. HARLAN.

SENSIBLE ADVICE.—Tommy and Johnny were playing doctor and patient. Johnny was the patient. He was supposed to be suffering from some deep-seated and mysterious malady. Dr. Tommy felt his pulse, took his temperature by means of the kitchen thermometer, thumped his chest and noted his respiration. "What you need, my dear sir," he said, "is to go and wash your feet. Five dollars, please."—*Chicago Record-Herald.*

The Dental Digest.

PUBLISHED THE FIFTEENTH DAY OF EVERY MONTH
At 2231 Prairie Avenue, Chicago,
Where All Communications Should be Addressed.

Editorial.

PROFESSIONAL ETHICS VERSUS PATENTS.

The leading article in this month's issue is a paper with the above title, by Dr. C. E. Bentley. If it were not for the fact that we have been asked to read a paper on the subject of patents before the next meeting of the Illinois State Dental Society we would discuss this question in detail. However, we cannot let the matter pass without calling attention to the paper and putting ourselves on record as unalterably opposed to the principles contained therein. Dr. Bentley is quite as forceful in writing as he is eloquent in speaking, and we sometimes wonder if in his enthusiasm he does not occasionally mislead himself by his own sophistry. On no other ground can we explain his attitude, as we must give him the credit of being sincere in what he says.

If an inventor should not patent the fruit of his labors, an author should not copyright his books or reap any benefit from the sale therefrom, but should simply either give them away or sell them for the actual cost of printing and binding. In discussing the paper the authors of several copyrighted books thought dentists should not take out patents, but said nothing about dentists taking out copyrights. Dr. Bentley also was strangely silent on this point. If he were familiar with the present copyright laws he would not quote Prof. Townsend, who wrote on the subject fifty years ago, as the laws are vastly different now from what they were then, giving the author of the present day much more protection. We cannot see any difference between the principle of copyright and patentright.

Dr. S. G. Perry is quoted as saying in 1889 that he was sorry he had ever taken out a patent. Dr. Bentley omitted to quote from Dr. Perry's last paper on the subject, written in 1901, wherein he upheld patents in the strongest terms, stated that it was perfectly ethical for a dentist to take them out and reap the benefit therefrom, and showed that the inventions which he had patented had been put on the market and were thought to be of considerable benefit to the profession,

while those which he did not patent, although he considered them just as valuable, had been lost to the profession because no manufacturer could afford to manufacture them without being protected in their sale.

A great scientist has remarked, "If a good idea were lying in the gutter free to all it would pay the community to make a present of a patent for it to any man competent to work it." The value of an invention depends upon its being put in the hands of those for whom it is intended, and this cannot be done unless it is patented. A good illustration of this principle is found in carborundum. A French scientist discovered that compounds of carbon with boron and silicon formed a magnificent abrasive. He did nothing in the matter, however, so no one benefited by his discovery. About the same time another scientist, working quite independently, also discovered the carbo-silicon compound. He did not merely record the scientific fact of discovery, but patented the process, with the result that while the first man's discovery did not directly benefit humanity one particle, the latter gave to the world the greatest abrasive ever produced, and no class has benefited more thereby than the dental profession.

We see no more reason why a dentist should give his time, money and energy to the profession without compensation than that he should serve his patients without making any charge for his time and material. What right have the great rank and file of the profession, who possess no inventive genius, and who make their living by the practice of dentistry, and who are dependent therein upon instruments and other mechanical appliances, to say to the inventor, even though he be a dentist: "It is unethical and unreasonable in you to reap any benefit from your labor and talent by taking out patents, even though we are greatly aided by having your inventions."

The essayist quotes the following sentence from Emerson: "He is base who receives favors and renders none," and then says: "A man who thoroughly assimilates this truth will be only too glad to give his very best, in order that he may escape the baseness of only receiving." The essayist thinks the inventor should not receive anything in return for what he gives to the profession, but he considers it perfectly proper for the entire dental profession to take from the inventor without giving anything. Who then would "escape the baseness of only receiving?"

Notices.

OHIO STATE DENTAL SOCIETY.

The thirty-sixth annual meeting of the Ohio State Dental Society will be held at the Great Southern Hotel, Columbus, Dec. 2-4, 1902. Members of the profession are cordially invited to be present.

S. D. RUGGLES, Secretary, Portsmouth.

MARYLAND STATE BOARD OF DENTAL EXAMINERS.

The Maryland State Board of Dental Examiners will meet for the examination of candidates for certificates, Nov. 5-6, 1902, at the Baltimore College of Dental Surgery, Eutaw and Franklin streets, Baltimore, beginning at 9 a. m. Application blanks and all information will be furnished by the Secretary.

F. F. DREW, Secretary, 701 N. Howard St., Baltimore.

CONNECTICUT DENTAL EXAMINERS.

The Dental Commissioners of the State of Connecticut will meet at Hartford, Nov. 11-13, 1902, to examine applicants for license to practice dentistry, and for the transaction of any other proper business. The practical examination in operative and prosthetic dentistry will be held Nov. 11, at 9 a. m., in Putnam Phalanx Armory, corner Haynes and Pearl Streets. The written theoretic examination will be held Nov. 12 and 13, at the Capitol. All applicants should apply to the Recorder for proper blanks, and for the revised rules for conducting the examinations. Application blanks must be carefully filled in and sworn to, and with fee, twenty-five dollars ($25.00), filed with the Recorder on or before Nov. 4, 1902.

By direction of the Dental Commissioners.

J. TENNEY BARKER, Recorder, Wallingford.

RESOLUTIONS OF CENSURE ADOPTED BY PUBLICATION COMMITTEE OF ILLINOIS STATE DENTAL SOCIETY.

Whereas: Frink & Young, the publishers of the *American Dental Journal*, and J. B. Dicus, its editor, have taken the liberty of publishing under the head of an abstract literally almost the full text of a paper entitled "Professional Ethics vs. Patents," read before this Society at its last meeting, without the consent of the Society, the author, or the DENTAL DIGEST, that journal being the authorized publisher of the proceedings; and,

Whereas: Such usurpation of the prerogatives and privileges of the Society must be regarded as a flagrant violation of professional ethics and editorial courtesy; therefore, be it

Resolved, That the Publication Committee of the Illinois State Dental Society hereby censures the said journal and its editor for an action which cannot be countenanced as professional, ethical or honorable; and be it further

Resolved, As a matter of precedent, that this action be reported in the

proceedings of the Society, and published in the DENTAL DIGEST simultaneously with the appearance of the article referred to.

(Signed) H. J. GOSLEE,
D. M. CATTELL,
G. W. DITTMARR,
Publication Committee Illinois State Dental Society.

NORTHEASTERN DENTAL ASSOCIATION.

The Northeastern Dental Association held its annual meeting Oct. 15-17, 1902, and elected the following officers: President, John F. Dowsley, Boston; Vice-Presidents, Henry McManus, Hartford, Conn., T. J. Barrett, Worcester, Mass.; Secretary, E. O. Kinsman, Cambridge, Mass.; Assistant Secretary, C. F. Kreppel, Forest Hills, Mass.; Treasurer, J. Tenney Barker, Wallingford, Conn.; Librarian, C. H. Riggs, Hartford, Conn.; Editor, D. W. Johnston, New Haven, Conn.

COLORADO STATE BOARD OF DENTAL EXAMINERS.

The Colorado State Board of Dental Examiners will meet in Denver, Dec. 2, 1902, at 9 a. m., for examination of applicants for license to practice dentistry in Colorado. In addition to written and oral examinations applicants must supply their own patients, instruments and material, and come prepared to do practical work under the supervision of the Board, which will pass upon suitable selection of cavities. All applications must be completed prior to Dec. 2, 1902. For application blanks and information address

H. F. HOFFMAN, Secretary,
California Bldg., Denver.

INTERNATIONAL DENTAL FEDERATION.

Stockholm, Sweden, Aug. 21, 1902.

The Executive Council of the International Dental Federation, charged by the Third International Dental Congress with the organization of the succeeding congresses, having received the invitations addressed by the National Dental Association, the Governor of the State of Missouri, the Mayor of the City of St. Louis, the National Association of Dental Examiners, the Missouri State Dental Association, the St. Louis Dental Society, the Society of Dental Science of St. Louis, the Odontographs of Western Missouri and Eastern Kansas, these being regularly represented at the Stockholm sessions by Messrs. Truman W. Brophy, William C. Barrett and Eugene H. Smith, accredited for this purpose.

Considering, on the one hand, First, That the progress of dentistry in the interval of four years seems insufficient to warrant a scientific interest in a fourth international dental congress after the one that was held in Paris in 1900. Second, That it would have been desirable that the forthcoming congress should be held in a country in which a similar international reunion had not been held before. But considering, on the other hand, Third, That universal expositions attract a considerable number of visitors from all

countries, and offer an occasion especially favorable to the success of international congresses. Fourth, That several international congresses will be held upon the occasion of the St. Louis Universal Exposition, and that it is convenient that odontology should be represented. Fifth, That until now no other invitation has been received from any other country. Sixth, That it is desirable to reach an early decision, so as to give the necessary time for a good preparation. Seventh, That the good organization of the congress is assured by the number and worthiness of the invitations received.

Accepts the invitation and decides that the Fourth International Dental Congress shall be held in the month of August, 1904, in the city of St. Louis, Mo., United States of America.

The undersigned certifies that this is an extract of the Proceedings of the Executive Council, and that it is an exact copy of the letter to be sent in reply to the invitation received.

THE SECRETARY GENERAL.
(Signed) DR. SAUVEZ.

RESOLUTIONS BY LOUISVILLE DENTISTS.

At a meeting of the dentists of Louisville, held at the office of Dr. B. O. Doyle, Friday, Sept. 26, 1902, the following resolutions were adopted: "In the midst of Life we are in Death. The Angel of Death cometh at a time when no man can tell. Truly has he come to summon our associate and colaborer, Dr. Geo. S. Seymour. Mingling with him but a few hours ago, we are suddenly shocked by the announcement that he has gone from among us. While we bow in humble submission to the will of Him who doeth all things well, we desire to give expression to our sense of the loss our profession has sustained in the taking from our ranks of one who for many years has labored in this community, standing ever ready to maintain the honor and dignity he felt was so justly its due. Therefore, we are here assembled to honor his memory, and to extend to his wife and family our earnest and most tender sympathy in this hour of their sad bereavement.

"Resolved, That a copy of this preamble and resolutions be sent the family, and furnished the dental journals and daily papers for publication.

"DR. CHAS. E. DUNN,
"DR. C. G. EDWARDS,
"DR. J. H. BALDWIN,
Committee."

SPITTOONS, TO KEEP CLEAN.—In the August DIGEST a London dentist advocates sprinkling a little sulphate of copper in the spittoon each morning to prevent any unpleasant odors. Others find that chlorid of lime is the great disinfectant and deodorant. I would advise the gentlemen, if they do not use the fountain cuspidor, to try washing their spittoons with water after each patient, and not allow the deposits to become so great and stale as to be odorous. If you have not a porter, do it yourselves, and your patients won't think any the less of you.—*J. L. Lindsay*, Poplar Bluff, Mo.

News Summary.

D. E. SORG, 32 years old, a dentist at Pittsburg, died Sept. 19, 1902.

D. H. WEBSTER, a dentist at San Antonio, Tex., died Sept. 22, 1902.

WM. JACKSON, a dentist at Albany, Ky., died of typhoid fever, Oct. 1, 1902.

A. E. CHERRY, 75 years old, a dentist of Oneida, N. Y., died Oct. 8, 1902.

H. D. CURRIE, a dentist at Cambridge, Mass., died suddenly Sept. 15, 1902.

J. T. ENOS, 54 years of age, a dentist at Salinas, Cal., died Oct. 6, 1902.

T. B. LEGARE, 59 years old, a dentist at Columbia, S. C., died Oct. 4, 1902.

A. E. KENNEDY, for many years a dentist at Morrison, Ill., died Oct. 5, 1902.

B. S. MORRILL, for many years a dentist at Hastings, Neb., died Oct. 1, 1902.

R. S. MCARTHUR, a young dentist at Dublin, Ga., died Sept. 30, 1902, from typhoid fever.

J. W. HUNTER, 70 years old, a dentist at Winston-Salem, N. C., died Sept. 20, 1902.

J. L. CLARK, 78 years of age and formerly a dentist at Waterloo, N. Y., died Sept. 7, 1902.

B. P. ELDRED, 32 years old, a dentist at Lanesboro, Minn., died of Bright's disease, Sept. 28, 1902.

G. S. SEYMOUR, 65 years of age, a dentist at Louisville, Ky., committed suicide Sept. 24, 1902.

R. E. WYATT, a dentist at Wyoming, O., 40 years of age, died Oct. 6, 1902, from Bright's disease.

E. B. RICH, 23 years of age, a dentist at Wyethville, Va., died Oct. 12, 1902, from consumption.

T. A. PATTISON, 28 years of age, a dentist at St. Cloud, Minn., died Oct. 8, 1902, from appendicitis.

J. P. GARVIN, 35 years of age, a dentist at Fond du Lac, Wis., died of consumption, Sept. 26, 1902.

J. R. PALMER, 74 years of age, and for many years a dentist in Texas, died at Dallas, Sept. 27, 1902.

E. R. TANNER, 30 years of age, a dentist at Ramona, Ind. Ter., died Oct. 8, 1902, from an overdose of morphin.

R. V. BLAKE, a dentist of San Francisco, was shot and probably fatally wounded on Oct. 16, by his partner, Dr. D. F. Stoll.

BANKRUPT.—W. H. Cummings, Pittsfield, Mass., liabilities, $2,038.43; assets, $185.—C. C. Winfrey, Mayfield, Ky., liabilities, $2,245; no assets.

FIRES.—Dr. Campbell, Malone, N. Y., Oct. 2, total loss.—A. C. Clark & Co., Chicago, Oct. 3, $40,000 loss.—Dr. Frazier, College View, Neb., Oct. 1, total loss; no insurance. Fire caused by the explosion of a gasoline stove.—

A dentist at Lincoln, Neb., was burned out this month by a fire caused by the explosion of a vulcanizer.—A. H. Tunks, Hopkinsville, Ky., Sept. 24, loss, $750; insurance, $400.

Toledo (O.) Dental Society elected the following officers Sept. 30, 1902: President, A. J. Wolfert; Vice-President, E. D. Gardiner; Secretary and Treasurer, L. L. Sheffield.

Canadian Dental Association elected the following officers this month: President, J. B. Willmott; Vice-President, E. Dudeau; Secretary, C. Trotter; Registrar, S. W. McInnes.

Porcelain Floors for Dentists.—Dr. O. W. Randall, in *Items,* makes a strong plea for a porcelain floor in all dental offices, his main argument being on the grounds of cleanliness.

Southwestern Iowa Dental Association met at Clarinda, Oct. 15, 1902, and elected the following officers: President, J. A. Ross; Vice-President, R. E. Chandler; Secretary, J. A. West.

Denver (Colo.) Dental Association elected the following officers Oct. 10, 1902: President, W. L. Roberts; Vice-President, W. A. Brierley; Secretary, F. L. Smith; Treasurer, W. P. Smedley.

Commission Wanted.—Patient—Vat! Do you mean to sharge me two tollars to visit? Doctor—That is my regular rate to everyone. Patient—Yase, but I indroduced der disease into der neighborhood!—*Life.*

Joe Daviess County (Ill.) Dental Association was organized Sept. 15, 1902, and the following officers were elected: President, J. J. Creswell; Vice-President, W. R. Russell; Secretary and Treasurer, A. R. Speer.

Rochester (N. Y.) Dental Society on Oct. 14, 1902, elected the following officers: President, F. Messerschmitt; Vice-President, F. Tarrant; Secretary, F. W. Proseus; Treasurer, W. A. Windell; Librarian, W. W. Belcher.

Southern Illinois Dental Society elected the following officers Oct. 15, 1902, after a two days' meeting at Alton, Ill.: President, J. M. Barcus; Vice-President, E. L. Burroughs; Secretary, H. K. Barnett; Treasurer, T. T. Baker.

No Compliment.—"You bear it like a little man," said the dentist, after he had pulled the tooth. "Huh!" exclaimed Tommy, "I'm a heap grittier than that. I bear it like a little woman." For Tommy was an observant boy.—*Chicago Tribune.*

The First District Dental Society of Illinois held its twentieth annual meeting at Rock Island, Sept. 23-24, 1902, and elected the following officers: President, C. B. Warner; Vice-President, A. I. Sargent; Secretary, H. W. McMillan; Treasurer, L. W. Skidmore. The next meeting will be held at Macomb.

Spain's Court Dentist in Chicago.—Dr. Floreston Aguilar of Madrid, Spain, dentist to the royal family, was in Chicago for a few days in September. Some of the dentists here gave him a complimentary dinner. He came to this country to visit the leading dental colleges, and as a representative of the Spanish government, to invite leading members of the medical

profession to attend the Fourteenth International Medical Congress at Madrid next April.

NORTHERN ILLINOIS DENTAL SOCIETY elected the following officers, Oct. 15, 1902: President, F. T. Bell; Vice-President, W. T. Reeves; Secretary, A. M. Harrison; Treasurer, M. R. Harned. The next meeting will be held at Freeport, Oct. 16-17, 1903.

ILLEGAL PRACTITIONERS.—Last month a dentist was arrested and fined $25 and costs for practising in Vermont without a license.—Oct. 1 three men employed by a dental parlor at Patchogue, N. Y., were each fined $50 and costs for practising dentistry without a license.

NORTEERN INDIANA DENTAL SOCIETY elected the following officers Sept. 25, 1902: President, M. A. Payne; Vice-President, S. B. Hartman; Secretary and Treasurer, J. A. Stoeckley; Executive Committee, A. L. Stephenson, Clem Shidler, F. H. Irwin, C. G. Keehn.

EXAMINING BOARD AFFAIRS.—This month the Minnesota State Board of Dental Examiners passed 14 out of 26 applicants for license.—The Pennsylvania State Board met this month, and elected the following officers: President H. E. Roberts; Secretary and Treasurer G. W. Klump.

GOLF FOR WRITER'S CRAMP.—Several sufferers from writer's cramp are reported to have obtained great relief by playing golf, as the game requires the use of the upper extremities just to the degree necessary for people who live sedentary lives. It ought to be a good thing for dentists.

SOMETHING IN STORE FOR HIM.—Doctor—I think you understand fully now the directions for these medicines, and this is for your dyspepsia. Patient—Why, I haven't dyspepsia, Doctor! Doctor—Oh, I know, but you will have it when you have taken all those other medicines.—*Tid Bits.*

FRATERNITY WINS SUIT.—Not long ago we reported that a dentist at Port Byron, Ill., had been injured while being initiated into a secret order, and had brought suit for damages for a large sum. The case has just been decided against him, thus establishing a precedent for this sort of thing.

PLATING ON A LARGE SCALE.—A woman at Alton, Ill., recently went to the office of a plating company, and, pulling her false teeth from her mouth, she handed them to the manager and stated that she wanted the whole thing gold-plated. She will certainly attract attention enough to satisfy her vanity.

HARTFORD (CONN.) DENTAL SOCIETY elected the following officers, Oct. 13, 1902: President, J. W. Harper; Vice-President, Edward Eberle; Treasurer, E. R. Whitford; Secretary, A. W. Cowee; Executive Committee, E. A. Abbey, T. K. Starr, A. E. Carey; Librarian, F. D. Clark; Historian, Chas. McManus.

DAMAGE SUITS.—A man in Portland, Ore., has sued his dentist for $1,000 damages, claiming that two gold crowns placed on his teeth did not fit, and caused ulceration of the gums and blood-poisoning.—A man at Keokuk, Ia., recently sued his dentist for $2,000 damages, claiming that the wrong tooth had been pulled and that his eyesight, digestion and capacity for work were affected thereby. The case was decided in favor of the dentist.—A woman

in Watertown, Conn., has sued her dentist for $250 damages, claiming that he took a gold bridge from her mouth and refused to return it.

Good Advice.—A prominent medical teacher writes: "For a student not afflicted with an idiosyncratic susceptibility to cephalic elephantiasis, and with the ability to learn and a willingness to work, there is no more wholesome and helpful training than service under (not with) a good, earnest, capable and successful physician."

Inspection of Teeth Opposed.—It is reported that the New York City board of education has decided to bar inspection of the school children's teeth by dentists, because the parents seem to take it as a personal reflection on them when a child takes home a statement from the examining dentist that his teeth needed to be fixed up.

Teeth Saved Her Life.—A twelve-year-old girl in Bath, Me., was recently accidentally shot by a younger brother who was playing with a revolver just a few feet from her. The upper cuspid and first and second bicuspids were shattered to pieces and the first molar was knocked out, but this was the extent of the damage.

X-rays at Fault.—A few days ago a man in Cleveland thought he had swallowed his false teeth while asleep, and the X-rays disclosed a swelling in the throat. He submitted to operation, but no teeth were found, and the swelling was shown to be due to laryngitis. The teeth were found in the man's bed, but he will probably die from the operation.

Prescribing by Wire.—For many years it has been the practice in remote parts of South Australia for people to telegraph their symptoms when they were sick to some doctor in the nearest town. He would wire back a prescription, which would be filled by the postmaster, who had a supply of drugs on hand. The government has, however, abolished the system.

Advanced Pediatrics.—The *Rochester Union and Advertiser* says that a Canadian firm, in an advertisement of a new nursing bottle it had patented, after giving directions for the use of the bottle, concluded as follows: "When the baby is done drinking it must be unscrewed and laid in a cool place under a tap. If the baby does not thrive on fresh milk it should be boiled."

Illinois State Board Honored.—Oct. 18, the dentists of Chicago gave a banquet to the members of the Illinois State Board of Dental Examiners, to J. J. Knickerbocker, attorney, and to Dr. J. N. Crouse, as a testimonial of their appreciation of the work which these men have done in suppressing the bogus diploma mills of Illinois. Over 100 dentists were present, including several guests from other states.

Ulcerous Neoplasm of Tongue or Buccal Cavity.—E. Lenglet concludes that: Excision of a bit of the lesion, followed by microscopical examination, is the surest, most rapid and least troublesome method for determining the nature of doubtful neoplastic ulcerations of the mouth and tongue. It allows the institution of rational treatment in each variety of these lesions. When this method cannot be followed, there is recourse to the injection of calomel, knowing that it may ameliorate epitheliomata, and diminish connective tissue infiltration, but it must be remembered that valuable time

may be lost in this way, as more time may be consumed than is strictly necessary for the confirmation of the diagnosis. Iodid of potassium should never be employed in doubtful cases, since it is so harmful in cases of epitheliomata.—*La Presse Med.*

GRAVE DANGER AVERTED. Certain thoughtful scientists have found out that the universal habit of using the teeth on the left side more than those on the right in chewing is slowly but surely working the human mouth over to the left side of the face, and that in a few thousand years it will be close to the left ear. The warning may have come in time, providentially, to save mankind from such a horrible fate.

DIVORCES.—Mrs. Ludwig A. Meyer has brought suit for divorce and alimony against her husband, a dentist in Cleveland.—Mrs. M. B. Pine has brought suit for divorce against her husband, a dentist of Chicago.—Mrs. H. M. Frey has brought suit for divorce against her husband, a dentist of Chicago.—Mrs. Emily L. Dutton has been granted a decree of divorce from her husband, B. W. Dutton, a dentist of Chicago.

O, PSHAW.—When the Shah of Persia was in France recently he had toothache, but the arrival of the dentist caused it to disappear, as is often the case. The Shah said that he did not want the dentist to lose his time, so commanded that each member of his suite should have a tooth extracted. He turned his back on them when he said this, and when he looked around he found, to his amusement, that every member of the staff had quietly slipped away except the Grand Vizier, who was toothless. The dentist was dismissed with a handsome present.

ROBBERIES.—Sept. 28, a dentist in Quincy, Ill., lost $25 in gold. Several complaints have come from towns in that section.—Sept. 20, a dentist at Iowa City, Ia., lost over $100.—Sept. 20, the office of a dentist at Cedar Falls, Ia., was robbed of $25 in gold.—Sept. 12, sneak thieves robbed the office of a dentist at Rochester, Minn.—Sept. 30, a dentist at Hannibal, Mo., was relieved of $25 worth of gold plate and other goods.—Oct. 2, two offices at Kingston, N. Y., lost about $110 through burglary.—Sept. 20, a dentist at Rochester, N. Y., found himself $150 poorer through the visit of sneak thieves.

FAILURE TO APPEAR BEFORE BOARD—REVOKING LICENSE.—The Supreme Court of Vermont says, in the case of Stevens vs. Hill, that the petitioner got himself licensed to practice medicine on the strength of a diploma from a college in Ohio. The board of censors who licensed him became suspicious that the diploma was bogus, and sent him word that they wanted to see it again. He promised to come, but failed to keep his word. Finally they had him summoned to appear and show cause why his license should not be revoked as having been procured by fraud in presenting a forged and spurious diploma. He did not appear, and the board revoked his license, basing their action, as they stated, partly on the affidavit of the secretary of the Ohio college that no such person as the petitioner had ever been granted a diploma therefrom. His request for a writ of certiorari, by which he hoped to get the case before the court for review, was put on the ground that the board acted without any evidence, in that the affidavit was not taken on notice to him. But the Supreme Court declares that it could not be said that the affidavit was no evi-

dence. If the petitioner wished to insist on formal and regular proof, he should have made his appearance. He chose to stay away, and it was not just that he should take the objection by this extraordinary writ. He had his day in court, and must be treated as having waived such formal objections as much as if he had been present and held his peace. Wherefore, the writ was denied.—*Jour. A. M. A.*

Blood-Count in Mumps.—Pick (*Wiener Klin. Rundschau, Jour. A. M. A.*) relates that more than 623 cases of mumps have occurred in Prague during the last 71 weeks, and the epidemic has included an unusual number of adults. The blood-count in ten cases examined showed that the number of leucocytes was constantly normal. The lack of hyperleucocytosis may aid in differentiating mumps from orchitis of other origin, gonorrheal for instance. which was accompanied by a leucocytosis of 8,000 to 16,000 in four cases examined. Its absence in mumps classes the disease as a purely serous exudation in the group with serous pleuritis or articular rheumatism.

Tea.—In spite of the statement recently made by Baron Kamura, Japanese Minister of Foreign Affairs, that America is the best customer of the tea world, one-quarter of the total production of tea in the world being consumed in the United States, statistics show that Great Britain is beyond all question the greatest tea-consuming country in the world. Her consumption amounts to over six pounds per head per year, while in the United States and in Russia the per capita consumption amounts to about one pound; in France to about 0.06 pounds, and in Germany 0.12 pounds. The total consumption of tea in the United Kingdom thus exceeds that of all the countries of Europe together, with the United States added.

Lost Teeth in Haymow.—Humor crops out in spots in the daily experience of the dentist, though the uninitiated is apt to call to mind only visions of "ohs" and "ahs" and involuntary screams from the innocent victim in the chair. A dignified dentist told how his funny bone was struck and he nearly lost a patient by laughing in his face. A typical old German farmer sat patiently undergoing repairs to his maxillary machinery. "How did you happen to lose your teeth?" politely inquired the dentist. "I loscht 'em in de haymow," was the unexpected reply. This brought an outburst of hilarity from the dentist, as the law of association brought before him a vision of the traditional needle in the haystack.

Fatalities.—Sept. 19, 1902, a twelve-year-old boy at Pittsburg died under chloroform after the extraction of one tooth.—Oct. 6, 1902, a young woman at Minneapolis died suddenly from heart failure. She had been in a comatose condition for two days following the extraction of some teeth by a dentist.—Sept. 28, 1902, a man died from blood-poisoning at McKeesport, Pa. He was an immigrant from Russia, and a few days before, while en route to America, one of his companions pulled an aching tooth with a pair of gas-pipe pincers.—A California millionaire had an ulcerated tooth treated in London some weeks ago, and has been ill ever since. Blood-poisoning followed, and he has had to undergo three operations for abscesses. —Sept. 22, 1902, a young woman at Bristol, Wis., nearly bled to death after the extraction of twelve teeth. A plaster cast finally stopped the

hemorrhage.—Sept. 26, 1902, a professor in Princeton College died from an overdose of chloral hydrate, taken to relieve a toothache.—Oct. 15, 1902, a woman at Columbus, O., had twenty teeth extracted in fifty seconds at a dental college, and died shortly afterwards.—Sept. 25, 1902, a woman at Butte, Mont., died under chloroform, given previous to the extraction of several teeth.

HOME-MADE DENTISTRY.—An interesting incident was told the other day about the second son of the President. They were all seated in church, the children one after the other and their father, the President, at the head, when a tiny hand of one of the sons was seen to twist energetically something from his mouth. He handed it with much pride to his neighbor, one of his brothers, and it was passed along until it reached the President, when a little hand next to him put something into his hand, and the President, with a smile, looked at it and passed it back again. When it came back to the youngster who had sent it, it was noticed that it was a tiny tooth, which he held with much pride, and all was quiet again in their section.

SURGICAL SIGNIFICANCE OF CARBUNCLE OF THE UPPER LIP AND FACE.—James E. Moore (*St. Paul Med. Jour.*) holds that with our present knowledge of this disease we are warranted in the conclusion that the so-called conservative or expectant treatment is applicable only to those cases in which the disease is so situated and is of so mild a character that the natural tendency is toward recovery. It certainly never is indicated when the disease is on the upper lip and face. When in this location the disease is accompanied by a mortality of 50 per cent. and is not to be trifled with. It is the physician's imperative duty to urge early operation, then if the patient or his parents refuse consent the responsibility is theirs. The highest success obtainable is secured by very early diagnosis and prompt treatment, for by this course we save our patient, and the scar is insignificant.

GLYCERIN AS A SOLVENT FOR ANTISEPTICS.—V. Wunschheim (*Archiv Hyg.*) has recently made a large number of experiments on the question whether glycerin added to antiseptic solutions or used as a solvent affects their bactericidal properties. From his observations he draws the following conclusions: (1) Undiluted commercial glycerin exhibits a bactericidal effect on cholera vibrios, staphylococcus pyogenes aureus, and bacillus coli; (2) in glycerin and water mixtures, B. coli and staphylococcus aureus remain alive longest in those in which the percentage of glycerin is lowest; the effect of high percentages of glycerin in mixture with water appears to differ according to the variety of bacterium used; (3) glycerin solutions of sulphuric acid, oxalic acid, carbolic acid and three isomeric creosoles, creolin, saprol, thymol, formol and tannin, correspond in bactericidal powers with watery solutions of these substances of equal concentrations; (4) hydrochloric acid and acetone in glycerin more so; (5) the disinfectant activity of 1-in-40 carbolic in glycerin-water mixture increases with increased concentration of the glycerin, and in a mixture of equal parts corresponds with the activity of the simple watery solution of 1 in 40. For practical purposes a solution of carbolic acid in pure glycerin should not be a lower percentage than 10, but in a mixture of equal parts of glycerin and water lower percentages than this possess

active bactericidal power; (6) carbolic acid, orthokresol, lysol and kreolin dissolved in glycerin soap solutions are less active than corresponding percentages in simple soap solutions.

RHYTHMIC SUBLUXATIONS OF LOWER JAW AS MEANS TO PREVENT CHLOROFORM SYNCOPE.—Instead of rhythmic traction of the tongue, Valery (*Gaz. des Hof.*) accomplishes the same results by rhythmic subluxations of the lower jaw, placing the thumbs on the posterior margin of the ramus near the angle and pushing the bone forward and upward between the administration of the drops of chloroform. The rhthmical subluxations thus induced become more decided as the muscles relax under the influence of the anesthetic. The suspending apparatus of the tongue participates in the movement, and it also aids in the expulsion of mucus. He corroborates the statements of Biousse in regard to the value of the lid reflex as a warning sign in anesthesia, and adds that the existence of keratitis may interfere with this reflex, and its absence should be determined beforehand before trusting too implicitly to it.

IS TOBACCO BENEFICIAL.—So much abuse is being heaped upon the head of Lady Nicotine that one would certainly be guilty of a lack of chivalry if he failed to register the good word that is occasionally said in her behalf. Dr. Dumon claims in a thesis that tobacco is of great use to medical men and those who come in contact with cases of diphtheria, tuberculosis and influenza. He has studied the action of tobacco-smoke upon various organisms found in the mouth, and has come to the conclusion that it greatly retards the development of the germs of the above-mentioned diseases. It has no effect upon the development of the germs of typhoid fever and tetanus. The experiments were made with definite cultures, and Dr. Dumon asserts with positiveness that the vapors of nicotin and pyridin, which are produced by burning tobacco, do render the mouth more or less aseptic. The same observation has been made by dentists.—*Merck's Archives.*

RESTRICTED VISION IN CITIES.—"Speaking of the practice of wearing glasses," said a well-known optician in Canal street, "there is a curious thing about the human eye that the average person is constantly overlooking. We talk a great deal about the influence of color, about glare, and all that sort of thing. Unquestionably color has a great deal to do with the weakness of the human eye at this time. Glare figures as an important factor in the impairment of the human sight. In the matter of color there is so much noting in these latter days that the eye is kept in an almost constant strain. Red is violently red, green violently green, and so on, until the eye is simply strained beyond the normal in an effort to visualize the hue, and hence the optic nerves are in a measure strained and injured. But this is not the greatest danger when we come to think of the modern tendencies so far as the human eye is concerned. There are other conditions which are infinitely more injurious than the matter of color. The glare is bad enough, too. The electric and incandescent lights are simply fearful on one's eyesight. But the thing I guard with more than any other influence is the condition which limits the scope of one's vision. The eye should have a broad range. One should have the opportunity of seeing a long distance. We are denied this opportunity. We are hemmed and hedged in until the distance we are capable of seeing is very short in-

deed. This is why I am a strong advocate of parks, of promenades. Green is naturally a restful color, and if the city could be provided with long avenues and splendid parks, where one's eyes could stretch out in a long vista, it would be a great thing."—*New Orleans Times-Democrat.*

IODOFORM FILLING FOR WOUNDS.—Wounds that form a cavity and defects in bones are treated by Mosetig-Moorhof (*Jour. A. M. A.*) as a dentist fills a tooth. A mixture of oil of sesame, 20 parts; spermaceti, 40 parts, and iodoform, 30 to 60 parts, is melted and poured into the cavity while still warm. It rapidly hardens and fills the cavity completely, bringing the iodoform into close contact with every particle of the tissues. This filling is particularly useful to close cavities in the bones; the tallowy substance is gradually absorbed as new bone is formed. The influence of the materials in the filling is directly stimulating to the tissues, and granulation proceeds more rapidly and satisfactorily than without it. The foreign mass is gradually devoured, as it were, by the crowding granulations. A few cases are described in detail, showing the great benefits derived from this aseptic and antiseptic, stimulating substitute for missing bone or tissues. The filling is sometimes partially expelled by the new tissues forming beneath, in open wounds. The mixture is kept in a bottle inside a thermophor, ready for use. The cavity in the bone may be sterilized with superheated air. In applying the filling to a tuberculous cavity in a long bone, a constricting bandage is applied above, the cavity filled with the mixture, and the constricting band removed after it has solidified. The skin is then sutured over the defect. Radiographs taken at intervals show that the filling gradually grows smaller, while the encroaching new formation of bone casts a normal shadow.

AGES AT WHICH DIFFERENT DISEASES CAUSE DEATH.—Deaths from consumption are divided by ages: Under forty-five, 59%; forty-five to sixty, 29%; above sixty, 12%. Thirty per cent of the deaths from other general diseases—small pox, measles, diphtheria, erysipelas, cancer, diabetes, etc. (which cause in the aggregate nearly one-eighth of all deaths)—occur under forty-five, 36% between forty-five and sixty, and 34% above sixty. Only 12% of the deaths from apoplexy, softening of the brain, paralysis, etc., occur under forty-five years; 33% occur between forty-five and sixty; 55% occur above sixty. Thirty-five per cent of the deaths from other nervous diseases than apoplexy, paralysis, etc., take place under forty-five; 38% between forty-five and sixty; 27% above sixty. Not more than 11% of the deaths from heart disease occur under forty-five; 33% between forty-five and sixty; 56% above sixty. Twenty-nine per cent of the deaths from pneumonia occur under forty-five; 35% between forty-five and sixty, and 36% above sixty. Other respiratory diseases, such as bronchitis, pleurisy, etc., grant a little longer lease of life. From such causes the deaths under forty-five are 24%; between forty-five and sixty, 30%; above sixty, 46%. Thirty per cent of the deaths from some derangement of the digestive system occur under forty; 38% between forty-five and sixty, and 32% above sixty. Only sixteen in 100 of the victims of Bright's disease are under forty-five; thirty-seven in 100 die between forty-five and sixty; the remaining 47% die after completing three score years. Other complaints, classified as genito-urinary,

are old age diseases, 77% of the deaths from such causes occurring at ages above sixty. Fifty per cent of the deaths from violent causes occur under forty-five. Human bodies that have been subjected to the wear and tear of three score years or more are most subject to the kind of breakdowns that puzzle the doctors. Fully 68% of the typhoid fever deaths occur under forty-five; 23% between forty-five and sixty, the remaining 9% at higher ages.—*Insurance Press.*

SUICIDE.—A study is made from the records of his company by Dr. Hanscom of the Royal Arcanum, which brings out a phase of the question little known. In a total death loss of 2,375 in 1901 there were 81 members who committed suicide. The continued losses from this cause incited the company to enact a law that no claim of the estate of a suicide would be paid unless the membership had existed at least five years. By an accurate comparison it was found that this restriction reduced the number of suicides to one-half or one-third what it was when the claims of suicides were paid the same as those of others. It is a strange datum of human nature, this demonstration that a certain number of men thinking of suicide will insure their life prior to doing so. It has been said that married men are less prone than others to commit suicide, but Dr. Hanscom's figures show that 67 married men, 7 widowers and 7 single men committed suicide in 1901. The report is mildly cynical as to the too common verdict of the coroner, "while temporarily insane." "Such verdicts may be excusable in the coroner, as an official who is called upon to perform the duties of both the physician and lawyer cannot be expected to perform either with skill or satisfaction to disinterested parties." In five years the suicidal means employed were by firearms, 182; by poison, 88; by hanging, 43; by asphyxiation, 35; by cutting, 21; by drowning, 15; by jumping from train or window, 4. It is a pathetic fact that of the 81 cases, 23 of the men were at the time of death out of employment and 25 had been in previous ill-health.—*American Medicine.*

MARRIED.—C. A. Atwood, Durand, Ill.; Hattie Louise Waggoner, Janesville, Wis., Sept. 17, 1902.—H. W. Barton, Akron, O.; Maud Elder Sutherland, Ann Arbor, Mich., Sept. 22, 1902.—J. Breeding, Dallas, Tex.; Deane Harris, San Antonio, Tex., Sept. 22, 1902.—J. J. Boyd Covington, Tenn.; Wanda Oldham, Ripley, Tenn., Oct. 1, 1902.—H. G. Butcher, Urbana, O.; Grace Hale, West Liberty, O., Sept. 18, 1902.—Clayton Carroll, Fort Herkimer, N. Y.; Eva M. Edick, Herkimer, N. Y., Oct. 15, 1902.—C. A. Cheney, Fond du Lac, Wis.; Eunice Susan, Fond du Lac, Wis., Sept. 23, 1902.—D. J. Colwell, Jr., Ithaca, Mich.; Harriet Barstow, Ithaca, Mich., Oct. 2, 1902.—L. F. Churchill, Chicago; Bessie Curtiss, Painesville, O., Sept. 15, 1902.—E. J. Driehs, Cincinnati; Theolinda Mangold, Cincinnati, Nov. 5, 1902.—A. L. Fountain, Louisville; Emma Jamison, Salem, Ky., Sept. 18, 1902.—H. Ganson, Nebraska City, Neb.; Gertrude Buffington, Mechanicsburg, O., Sept. 24, 1902.—E. D. Hunt, La Rue, O.; Jessie S. Hobensack, Mt. Victory, O., Oct. 6, 1902.—W. B. Jones, New Berlin, N. Y.; M. Isabelle Benedict, Waterville, N. Y., Oct. 15, 1902.—A. P. Johnson, Chicago; Woodie Davis, Baltimore, Oct 8, 1902.—Arthur Kidder, Buffalo; Mary Ethel Meecham, Toronto, Canada, Sept. 25, 1902.—Clarence Longfellow, Bellefontaine, O.;

Florence Curl, Bellefontaine, O., Sept. 10, 1902.—A. M. Nehs, Milwaukee; Frances E. Pierce, Darlington, Wis., Sept. 10, 1902.—Herbert Newman, Versailles, Ky.; Alice Land, Lexington, Ky., Oct. 1, 1902.—L. G. Noel, Nashville, Tenn.; Augusta Jonnaid, Nashville, Tenn., Oct. 30, 1902.—E. B. Rhinehart, Schenectady, N. Y.; Louise Lee, North Adams, N. Y., Sept. 24, 1902.

CROSS-EXAMINATION OF EXPERT WITNESSES.—The Supreme Court of Idaho says, in the personal injury case of McLean and wife vs. the City of Lewiston, that one of the assignments of error went to the right of counsel for the parties suing, on cross-examination of a medical witness, to make out his case by such cross-examination. It appeared that a physician was called as a medical expert on the part of the city, and on cross-examination a long hypothetical question was put to him which had been propounded to medical witnesses of the parties suing, and had been answered by them, and the answer of this witness corroborated the evidence of the experts of the parties suing, and served to strengthen it. But the court says that the parties suing did not rely on that cross-examination to make out their case. Under the law a liberal range is allowed in the cross-examination of expert witnesses; and the court does not think that error was committed in said matter. Hypothetical questions, it also holds, must be based on the facts admitted or established by the evidence, or both.—*Jour. A. M. A.*

IT WAS NO USE.—The captain of a down-town Salvation Army corps noticed the other day that one of the most zealous women of his flock had been absent from meeting several times in succession. He sent her a note of inquiry and received in reply the following pathetic letter: "*Dear Captain* —it ain't no Spirrital trouble—praise god, I'm all right there, but it's becaus I got a bad cold & my Nose runs. Now they ain't no use goin' to meeting and praying when youre Nose runs and spoils all youre enjoyment. So Glory to god, good Bye."

CHEERFUL.—Oh, let us all be joyous
While we may,
Though the scientists annoy us
Every day.
For they agitate the topic
Of these creatures microscopic,
Till we're getting misanthropic,
Old and gray.
So now to drown our sorrow
Let us try,
Lest some microbe on the morrow
Should draw nigh.
Let the song and dancing thrill us,
Let's forget that a bacillus
Hopes with all his heart to kill us
By and by.

—*Washington Star.*

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